SLV-760HF/760HFPX/761HF/790HF/960HF/960HFCS/960HFMX/960HFPX/L5CS/L5MX/L5PA/L7HFCS/L7HFMX/L7HFPA

RMT-V158C/V161A/V181K/V184A/V186/V186A

SERVICE MANUAL

US Model
SLV-760HF/761HF/790HF/960HF

Canadian Model
SLV-760HF/790HF/960HF

PX Model
SLV-760HFPX, 960HFPX

Chielean Model
SLV-960HFCS/L5CS/L7HFCS

Mexican Model
SLV-960HFMX/L5MX/L7HFMX

Panamanian Model
SLV-L5PA/L7HFPX

H MECHANISM

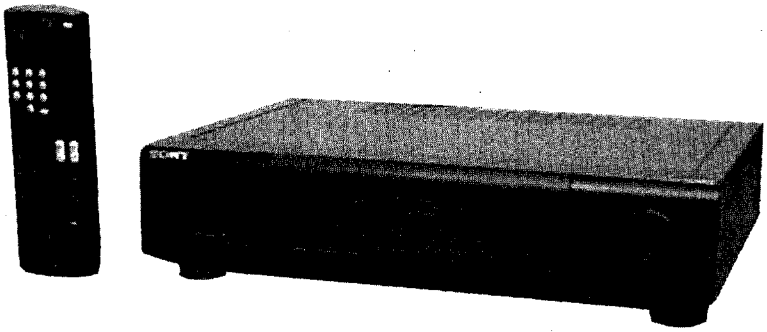

Photo: SLV-960HF

- **Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENTS IV for MECHANICAL ADJUSTMENTS. (9-973-623-11)**

* The abbreviations of 760, 761, 790, 960, L5 and L7 contained in this service manual are indicated when these models are common to all their corresponding models as given below.

Abbreviated model name	760	761	790	960	L5	L7
All model names SLV-	760HF (US) 760HF (Canadian) 760HFPX	761HF	790HF (US) 790HF (Canadian)	960HF (US) 960HF (Canadian) 960HFCS 960HFMX 960HFPX	L5CS L5MX L5PA	L7HFCS L7HFMX L7HFPA

SPECIFICATIONS

System

Format
  VHS NTSC standard
Video recording system
  Rotary head helical scanning FM system
Video heads
  Double azimuth four heads
Video signal
  NTSC color, EIA standards
Tape Speed
  SP: 33.35 mm/s (1 3/8 inches/s)
  EP: 11.11 mm/s (7/16 inches/s)
  LP: 16.67 mm/s (11/16 inches/s), playback only
Maximum recording/playback time
  8 hrs. in EP mode (with T-160 tape)
Fast-forword and rewind time
  Approx. 3 min. (with T-120 tape)

Tuner section

Channel coverage
  VHF 2 to 13
  UHF 14 to 69
  CATV A-8 to A-1, A to W, W+1 to W+84
Antenna
  75-ohm antenna terminal for VHF/UHF

Inputs and outputs

LINE-1 IN and -2 IN (SLV-760/761/790/960)
  VIDEO IN, phono jack (1 each)
  Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
  AUDIO IN, phono jack (2 each)
  Input level: 327 mVrms
  Input Impedance: more than 47 kilohms
LINE-1 IN (SLV-L5/L7)
  VIDEO IN, phono jack (1)
  Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
  AUDIO IN, phono jack (1) (SLV-L5)
  Input level: 327 mVrms
  Input impedance: more than 47 kilohms
  AUDIO IN, phono jack (2 each) (SLV-L7)
  Input level: 327 mVrms
  Input impedance: more than 47 kilohms
LINE OUT (SLV-760/761/790/960/L5/L7)
  VIDEO OUT, phono jack (1)
  Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative

– Continued on next page –

VHS Hi-Fi VIDEO CASSETTE RECORDER

VCRplus+

SONY®

MICROFILM

AUDIO OUT, phonojack (2)
Standard output: 327 mVrms
Load impedance: 47 kilohms
Output impedance: less than 10 kilohms
SYSTEMLINK (CONTROL S IN)
(SLV-790/960)
Mini jack (1)
CABLE BOX CONTROL (CONTROL S OUT)
(SLV-790/960)
stereo mini jack (plug in power) (1)

Timer section

Clock
Quarts locked
Timer indication
12-hour cycle
Timer setting
8 programs per month (max.)
Power back-up
Built-in self-charging capacitor
Back-up duration: up to 3 hours at a time

General

Power requirements
120 V AC, 60 Hz (SLV-760HF/790/960HF/960HFMX/L5MX/L5PA/L7HFMX/L7HFPA)
110 V AC to 240 V AC, 50/60 Hz (SLV-760HFPX/960HFPX/960HFCS/L5CS/L7HFCS)
Power consumption
18 W (max.) (SLV-L5)
24 W (max.) (SLV-760HFPX/960HFCS/960HFMX/960HFPX/L7)
27 W (max.) (SLV-760HF/761HF/790/960HFMX)
Operating temperature
5 °C to 40 °C (41 °F to 104 °F)
Storage temperature
–20 °C to –60 °C (–4 °F to 140 °F)
Dimensions
Approx. ($17 \times 4\frac{3}{8} \times 12\frac{1}{8}$ inches) including projecting parts and controls
Approx. 430×109×310 mm (w/h/d)
(SLV-760/761/L5/L7)
Approx. ($17 \times 4\frac{3}{8} \times 12\frac{1}{4}$ inches) including projecting parts and controls
Approx. 430×109×323 mm (w/h/d)
(SLV-790/960)
Approx. ($17 \times 4\frac{3}{8} \times 12\frac{3}{4}$ inches) including projecting parts and controls

Mass
Approx. 4.3 kg (9 lb 8 oz)
(SLV-760/761/L5/L7)
Approx. 4.5 kg (9 lb oz) (SLV-790/960)

Supplied accessories

Remote commander (1)
Size AA (R6) batteries (2)
75-ohm coaxial cable with F-type connectors (1)
AC power cord (1)
Audio/video cable (3 phono, 1 mini to 3 phono, 1 mini) (1) (SLV-790/960)
Audio/video cable (3 phono to 3 phono) (1) (SLV-760/761/L7)
Cable Mouse (cable box controller) (1) (SLV-790/960)
Plug adaptor (1) (SLV-760HFPX/960HFPX/960HFCS/L5CS/L7HFCS)

Design and specifications are subject to change without notice.

• Feature Difference

SLV- FEATURE	760, 761	790	960	L5	L7
AUDIO SYSTEM	HiFi	HiFi	HiFi	MONO	HiFi
OPERATING SWITCH BLOCK	×	○	○	×	×
FRONT LINE-2IN	○	○	○	×	×
CONTROL S IN/OUT	×	○	○	×	×
DUAL MODE SHUTTLE	○	○	○	○	○
REMOTE COMMANDER RMT-	V184A	V161A	V158C	V186A	V186

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

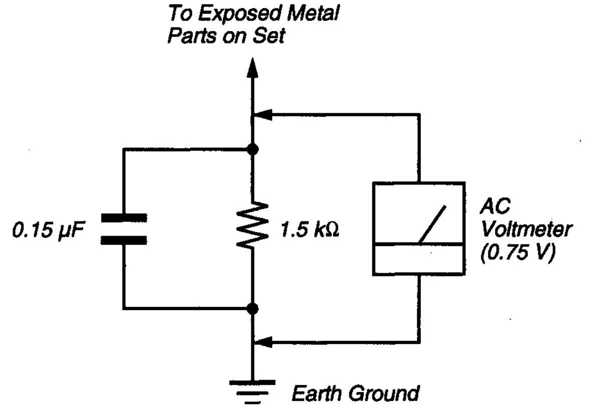

Fig. A Using AC voltmeter to check AC leakage

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

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SERVICE NOTE

1. UPPER DRUM REPLACEMENT (EXCEPT L5)

1-1. Removal of Upper Drum

1) Remove the screw ① (BV3 × 8) and take out the ground shaft assembly ②. (See Fig. 1.)
2) Completely remove the rotary upper drum board and desolder the soldering indicated by the arrows.
3) Remove two screw ③ (PSW3 × 8) and take out the rotary upper drum in the arrow direction Ⓐ. (See Fig. 2.)
   If it difficult, remove by shaking the rotary upper drum gradually.

Note: If the drum can not be removed, check whether the solders have been removed or not again.

1-2. Mounting Upper Drum

1) When inserting the rotary drum into the lower drum, be careful not to blur the contacting surface with fingerprint or the like.
2) Mount the rotary upper drum board so that the screw holes of both upper and lower drums match. (See Fig. 2.)
3) If it is difficult, mount the upper drum by shaking it gradually.
   Note: Be careful not to damage the head. Make sure that the upper drum is tightly inserted.
4) Tighten two screws ③ (PSW3 × 8). (See Fig. 2.)
   Note: Temporary tighten two screws. After making sure that upper drum is tightly inserted, tighten the screws.
5) Solder points on the board of the rotary upper drum.
6) Fix the ground shaft assembly ② using the screw ① (BV3 × 8) so that the protrusion of ground shaft assembly end contacts the center of the drum shaft.
   Note: When attaching the ground shaft assembly ②, be careful not to apply force to the spring section of it.

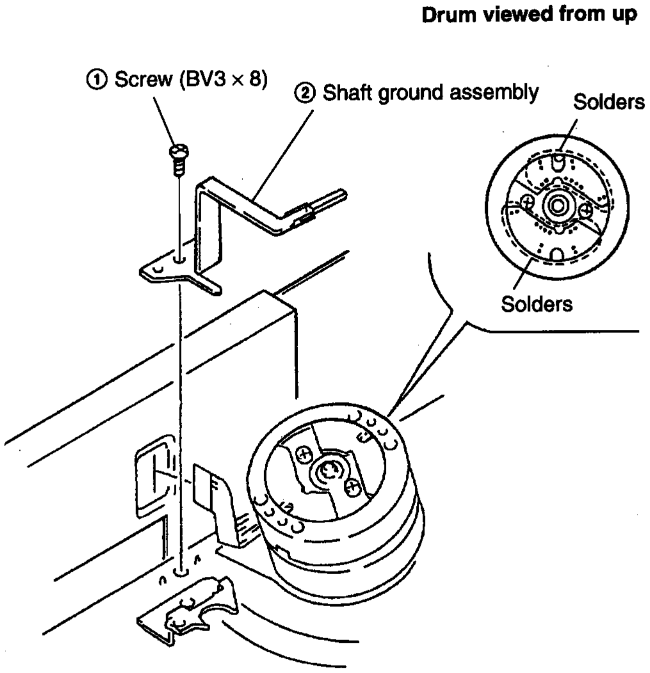


Fig. 1

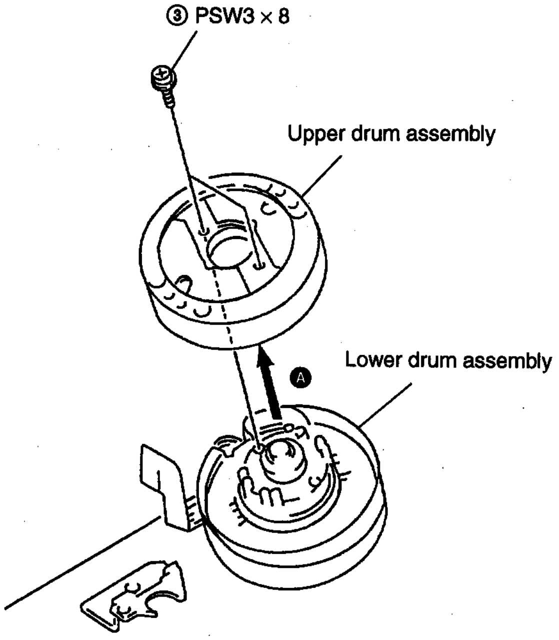


Fig. 2

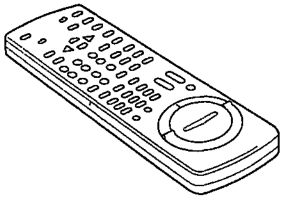
SECTION 1
GENERAL

This section is extracted from SLV-960HF/960HFCS, 960HFMX, 960HFPX instruction manual.

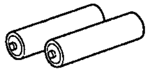
Step 1
Unpacking

Check that you have received the following items with the VCR:

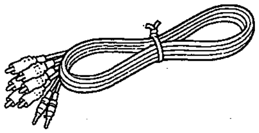
- Remote commander



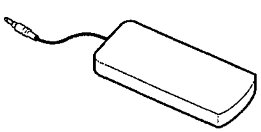
- Size AA (R6) batteries



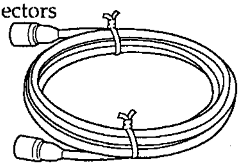
- Audio/video cable (3-phono, 1 mini to 3-phono, 1-mini)



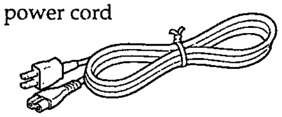
- Cable Mouse (cable box controller)



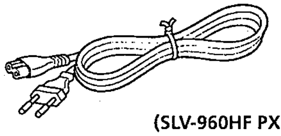
- 75-ohm coaxial cable with F-type connectors



- AC power cord

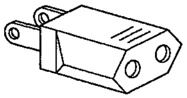


(SLV-960HF/960HF MX)



(SLV-960HF PX/960HF CS)

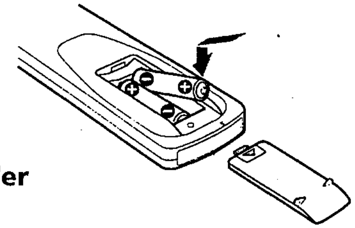
- Plug adaptor (SLV-960HF PX/960HF CS)



Step 2
Setting up the remote commander

Inserting the batteries

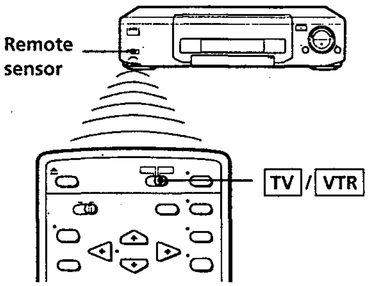
Insert two size AA (R6) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.



Using the remote commander

You can use this remote commander to operate this VCR and a Sony TV. The POWER, VOL +/–, CH +/–, TV/VTR, channel number, ENTER, DISPLAY, and AUDIO MONITOR buttons on the remote commander can be used to operate your Sony TV.

To operate	Set TV/VTR to
the VCR	VTR and point at the remote sensor on the VCR
a Sony TV	TV and point at the remote sensor on the TV



Notes

- With normal use, the batteries should last for approximately three to six months.
- If you do not use the remote commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage.
- Do not use a new battery with an old one.
- Do not use different types of batteries.

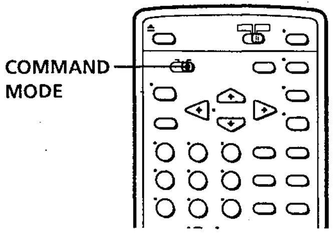
Setting the COMMAND MODE switch

To remotely control the VCR with the commander, set COMMAND MODE on the remote commander to the same position as that on the VCR. Usually set to VTR 3. Change the position as shown below to control other Sony VCRs:

VTR 1: For Sony Betamax format VCRs

VTR 2: For Sony 8mm format VCRs

VTR 3: For Sony VHS format VCRs



continued

Controlling other TVs with the remote commander

The remote commander is preprogrammed to control non-Sony TVs. If your TV is listed in the table below, set the appropriate manufacturer's code number.

1 Set [TV]/[VTR] at the top of the remote commander to [TV].

2 Hold down POWER, and enter your TV's code number(s) using the number buttons. Then release POWER.

Now you can use the POWER, VOL +/–, CH +/– and TV/VTR buttons to control your TV. You can also use the buttons marked with a dot (•) to control a Sony TV. To control the VCR, reset [TV]/[VTR] to [VTR].

Code numbers of controllable TVs

If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

Manufacturer	Code number	Manufacturer	Code number	Manufacturer	Code number
Sony	01	KMC	03	RCA	04,10
Akai	04	Magnavox	03,08,12	Sampo	12
AOC	04	Marantz	04,13	Sanyo	11
Centurion	12	MGA/Mitsubishi	04,12,13,17	Scott	12
Coronado	03	NEC	04,12	Sears	07,10,11
Curis-Mathes	12	Panasonic	06,19	Sharp	03,05,18
Daytron	12	Philco	03,04	Sylvania	08,12
Fisher	11	Philips	08	Teknika	03,08,14
General Electric	06,10	Pioneer	16	Toshiba	07
Hitachi	02,03	Portland	03	Wards	03,04,12
J.C.Penny	04,12	Quasar	06,18	Yorx	12
JVC	09	Radio Shack	05,14	Zenith	15

Notes

- If the TV uses a different remote control system from the one programmed to work with the VCR, you cannot control your TV with the remote commander.
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote commander, the code number automatically resets to 1 (Sony). Reset the appropriate code number.

Step 3

Hookups

Selecting the best hookup option

There are many ways in which your VCR can be hooked up. To hook up your VCR so that it works best for you, first scan through the table below. Then use the accompanying diagrams and procedures on the following pages to set up your VCR.

If you have	Use	Refer to
TV that has audio/video inputs	**Audio/video (A/V) hookup**, then follow one of the hookups below.	**Pages 8 to 9**
Cable box that is compatible with the VCR's cable box control feature	**Hookup 1**	**Pages 10 to 12**
No cable box or incompatible cable box with only a few scrambled channels	**Hookup 2**	**Pages 13 to15**
Antenna only, no cable TV	**Hookup 3**	**Pages 16 to 18**
Incompatible cable box with many scrambled channels	**Hookup 4**	**Pages 19 to 21**
DSS* receiver	**Hookup 5**	**Pages 22 to 24**
Incompatible cable box with only a few scrambled channels, using an A/B switch	**Hookup 6**	**Pages 25 to 28**

After you've completed the connections, follow the instructions for setup. During setup, if you need more details on the procedure described, page numbers are provided where you can find complete, step-by-step instructions.

After you've completed the setup, you're ready to use your VCR. Procedures differ depending on the hookup you used. For an overview, refer to "Quick reference to using the VCR" on the back cover.

Before you get started

- Turn off the power to all equipment.
- Do not connect the AC power cords until all of the connections are completed.
- Be sure you make connections firmly. Loose connections may cause picture distortion.
- If your TV doesn't match any of the examples provided, see your nearest Sony dealer or qualified technician.

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* DSS is a registered trademark of DIRECTV, Inc., a unit of Hughes Electronics Corporation.

continued

Audio/video (A/V) hookup

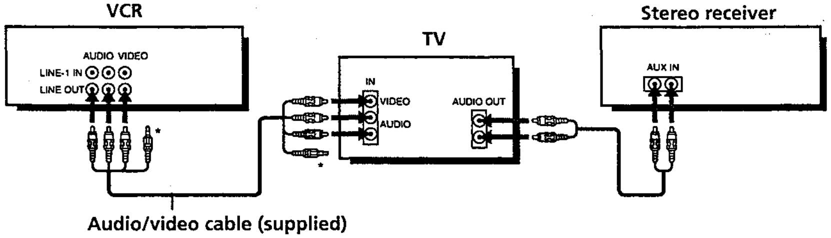
Pages 8 to 9

If your TV has audio/video (A/V) input jacks, you will get a better picture and sound if you hook up your VCR using these connections. In addition, for a true "home theater" experience, you should connect the audio outputs of your VCR or TV to your stereo system. If your TV doesn't have A/V inputs, see the following pages for antenna or cable hookups.

If your TV has the SystemLink (A/V bus control) function, hook up your VCR using the connection shown on page 9. Your TV will automatically switch to the A/V inputs for your VCR when you play back or operate menu on the VCR.

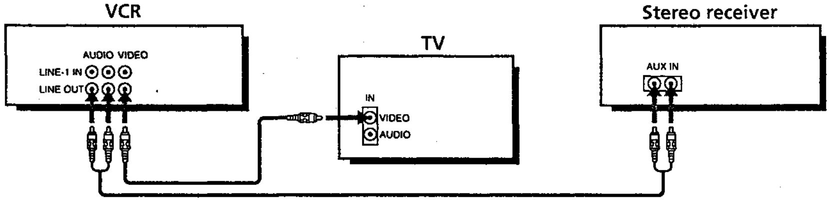
If you're not planning to use your VCR to record programs, you're finished setting up the VCR after you've made the connections shown on pages 8 and 9. If you want to record off-air or off your cable TV system, complete these connections first, and then go to the following pages for antenna or cable hookups.

A Use this hookup if your TV has stereo jacks


VCR
AUDIO VIDEO
LINE-1 IN
LINE OUT
*
TV
IN
VIDEO
AUDIO
AUDIO OUT
*
Stereo receiver
AUX IN
Audio/video cable (supplied)

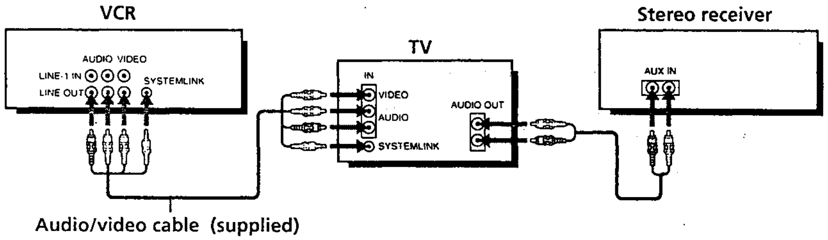
* Do not connect the miniplugs for this hookup.

B Use this hookup if your TV doesn't have stereo jacks


VCR
AUDIO VIDEO
LINE-1 IN
LINE OUT
TV
IN
VIDEO
AUDIO
Stereo receiver
AUX IN

Note
To play a tape in stereo, you must use the A/V connection.

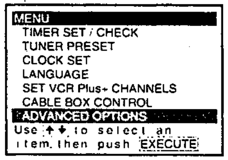
C Use this hookup if your TV has the SystemLink function


VCR
AUDIO VIDEO
LINE-1 IN
LINE OUT
SYSTEMLINK
TV
IN
VIDEO
AUDIO
SYSTEMLINK
AUDIO OUT
Stereo receiver
AUX IN
Audio/video cable (supplied)

A/V hookup: VCR setup

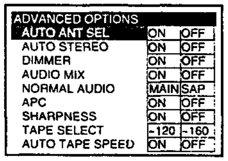
After you've connected your TV and completed antenna or cable hookup, use the following procedure to set up the VCR.

Press MENU and select ADVANCED OPTIONS.



MENU
TIMER SET / CHECK
TUNER PRESET
CLOCK SET
LANGUAGE
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
ADVANCED OPTIONS
Use ↑↓ to select an item, then push EXECUTE

Set AUTO ANT SEL to OFF and press EXECUTE.



ADVANCED OPTIONS		
AUTO ANT SEL	ON	OFF
AUTO STEREO	ON	OFF
DIMMER	ON	OFF
AUDIO MIX	ON	OFF
NORMAL AUDIO	MAIN	SAP
APC	ON	OFF
SHARPNESS	ON	OFF
TAPE SELECT	-120	-160
AUTO TAPE SPEED	ON	OFF

For details, see page 66.

Caution
Connections between the VCR's VHF/UHF connector and the antenna terminals of the TV receiver should be made only as shown in the following instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of RF devices. Never connect the output of the VCR to an antenna or make simultaneous (parallel) antenna and VCR connections at the antenna terminals of your receiver.

Note to CATV system installer
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Hookup 1 Pages 10 to 12

Using cable box control

Recommended use

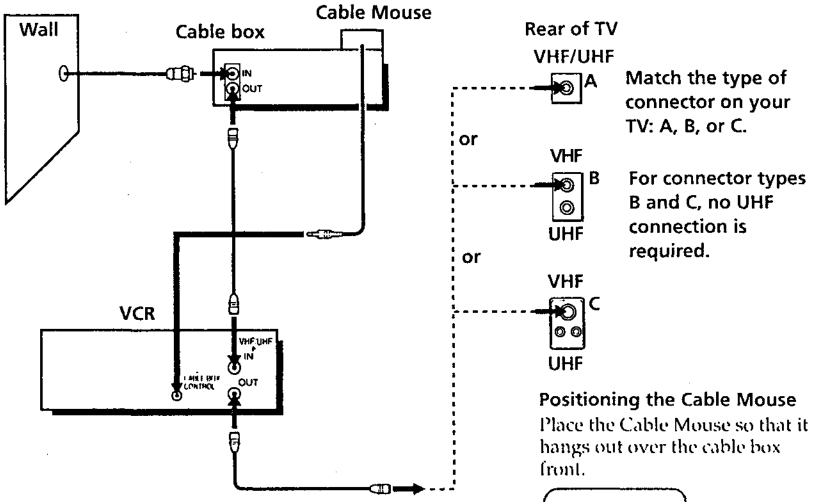
You should use this hookup if you have a cable box, especially if your cable system scrambles all or most channels. This hookup allows the VCR's cable box control feature to control the channel on the cable box, simplifying the recording process. A list of compatible cable boxes is on page 37.

What you can do with this hookup

- Record any channel using the VCR's cable box control feature to select channels on the cable box

What you can't do

- Record with the cable box turned off
- Record one channel while watching another channel

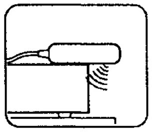


Match the type of connector on your TV: A, B, or C.

For connector types B and C, no UHF connection is required.

Positioning the Cable Mouse

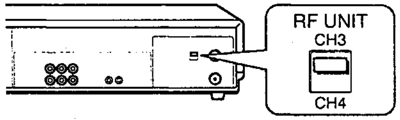
Place the Cable Mouse so that it hangs out over the cable box front.

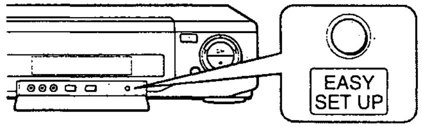


Hookup 1: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.

For details, see page 72.
If you made A/V connections (from page 8), you can skip this step.

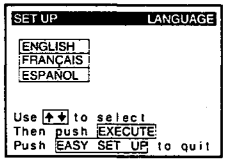




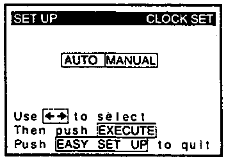
2 Turn on your cable box.

3 Press EASY SET UP on the VCR.

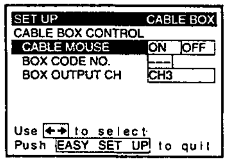
❶ The LANGUAGE menu appears. Change the on-screen display language to French (FRANÇAIS) or Spanish (ESPAÑOL) if desired, and press EXECUTE. For details, see page 29.


SET UP LANGUAGE
ENGLISH
FRANÇAIS
ESPAÑOL
Use ↑↓ to select
Then push EXECUTE
Push EASY SET UP to quit

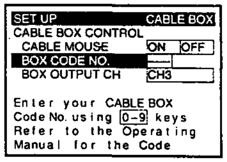
❷ The CLOCK SET menu appears. Select AUTO and press EXECUTE. For details, see page 30.


SET UP CLOCK SET
AUTO MANUAL
Use ←→ to select
Then push EXECUTE
Push EASY SET UP to quit

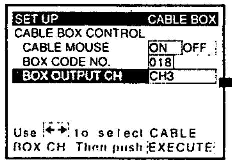
❸ The CABLE BOX CONTROL menu appears. Select ON. For details, see page 36.

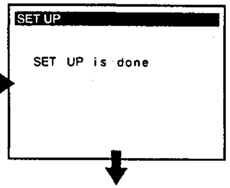

SET UP CABLE BOX
CABLE BOX CONTROL
CABLE MOUSE ON OFF
BOX CODE NO. ---
BOX OUTPUT CH CH3
Use ←→ to select
Push EASY SET UP to quit

❹ Enter your cable box code number and press CURSOR↓


SET UP CABLE BOX
CABLE BOX CONTROL
CABLE MOUSE ON OFF
BOX CODE NO. ---
BOX OUTPUT CH CH3
Enter your CABLE BOX
Code No. using 0–9 keys
Refer to the Operating
Manual for the Code

❺ Select your cable box output channel and press EXECUTE.


SET UP CABLE BOX
CABLE BOX CONTROL
CABLE MOUSE ON OFF
BOX CODE NO. 018
BOX OUTPUT CH CH3
Use ←→ to select CABLE BOX CH Then push EXECUTE


SET UP
SET UP is done

Normal display

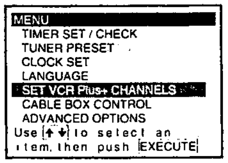
continued

Hookup 1: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details, see page 45.

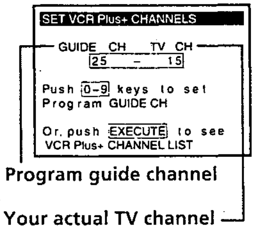
2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows. For details, see page 46.

❶ Press MENU and select SET VCR Plus+ CHANNELS.


MENU
TIMER SET / CHECK
TUNER PRESET
CLOCK SET
LANGUAGE
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
ADVANCED OPTIONS
Use ⬆⬇ to select an item, then push EXECUTE

❷ Enter the program guide channel, then the channel you use on your TV.

❸ Press EXECUTE.


SET VCR Plus+ CHANNELS
GUIDE CH TV CH
25 – 15
Push 0–9 keys to set Program GUIDE CH
Or, push EXECUTE to see VCR Plus+ CHANNEL LIST

Program guide channel

Your actual TV channel

Automatic clock setting

Once you've set up the VCR, it automatically sets the clock the first time you turn off the VCR. After that, whenever you turn off the VCR, it checks the time and adjusts the clock, even for Daylight Saving Time. The VCR sets the clock by picking up a time signal provided by some TV channels.

If you want to use the timer to record right away, or if the channels in your area do not carry time signals, set the clock manually. For details, see pages 34–35.

Note

To use the automatic clock setting feature, leave the cable box on.

Hookup 2 Pages 13 to 15

No cable box, or incompatible cable box with only a few scrambled channels

Recommended use

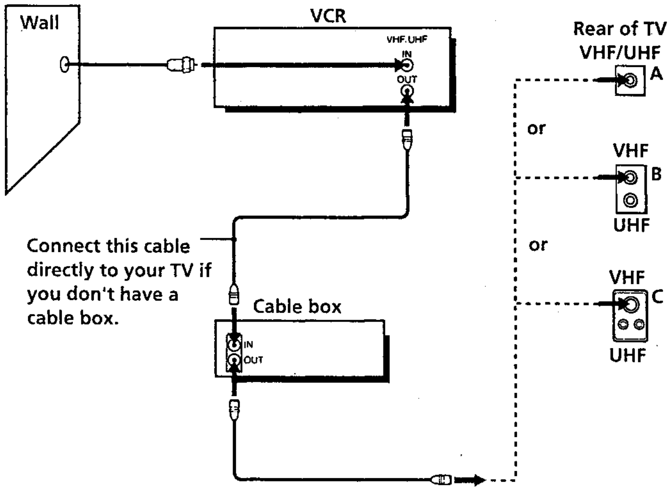
Use this hookup if you do not have a cable box. Also use this hookup if your cable company cannot supply a cable box that is compatible with the VCR's cable box control feature, and your cable system scrambles only a few channels.

What you can do with this hookup

- Record any unscrambled channel by selecting the channel on the VCR

What you can't do

- Record scrambled channels that require a cable box



Connect this cable directly to your TV if you don't have a cable box.

Match the type of connector on your TV: A, B, or C.

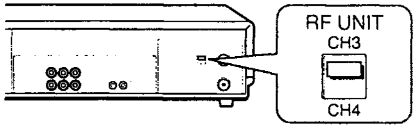
For connector types B and C, no UHF connection is required.

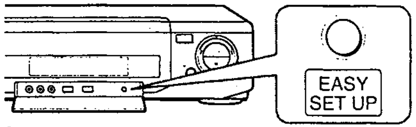
continued

Hookup 2: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.

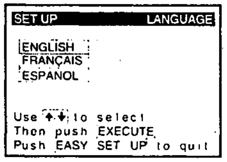
For details, see page 72.
If you made A/V connections (from page 8), you can skip this step.


RF UNIT
CH3
CH4

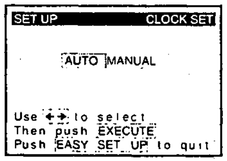


2 Press EASY SET UP on the VCR.

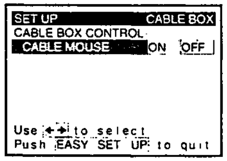
❶ The LANGUAGE menu appears. Change the on-screen display language to French (FRANÇAIS) or Spanish (ESPAÑOL) if desired, and press EXECUTE. For details, see page 29.


SET UP LANGUAGE
ENGLISH
FRANÇAIS
ESPAÑOL
Use ↑↓ to select
Then push EXECUTE
Push EASY SET UP to quit

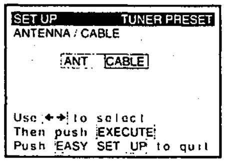
❷ The CLOCK SET menu appears. Select AUTO and press EXECUTE. For details, see page 30.


SET UP CLOCK SET
AUTO MANUAL
Use ←→ to select
Then push EXECUTE
Push EASY SET UP to quit

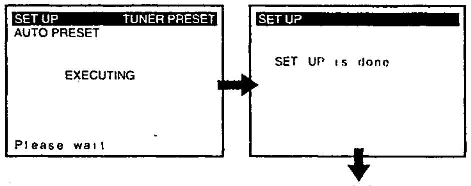
❸ The CABLE BOX CONTROL menu appears. Select OFF and press EXECUTE. For details, see page 36.


SET UP CABLE BOX
CABLE BOX CONTROL
CABLE MOUSE ON OFF
Use ←→ to select
Push EASY SET UP to quit

❹ The TUNER PRESET menu appears. Set ANTENNA/CABLE to CABLE and press EXECUTE. For details, see page 41.


SET UP TUNER PRESET
ANTENNA / CABLE
ANT CABLE
Use ←→ to select
Then push EXECUTE
Push EASY SET UP to quit

❺ The AUTO PRESET starts.


SET UP TUNER PRESET
AUTO PRESET
EXECUTING
Please wait
SET UP
SET UP is done

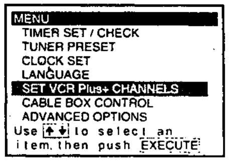
Normal display

Hookup 2: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details, see page 45.

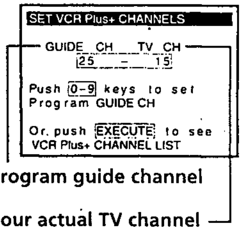
2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows. For details, see page 46.

❶ Press MENU and select SET VCR Plus+ CHANNELS.


MENU
TIMER SET / CHECK
TUNER PRESET
CLOCK SET
LANGUAGE
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
ADVANCED OPTIONS
Use ↑↓ to select an item, then push EXECUTE

❷ Enter the program guide channel, then the channel you use on your TV.

❸ Press EXECUTE.


SET VCR Plus+ CHANNELS
GUIDE CH TV CH
25 – 15
Push 0-9 keys to set Program GUIDE CH
Or, push EXECUTE to see VCR Plus+ CHANNEL LIST
Program guide channel
Your actual TV channel

Automatic clock setting

Once you've set up the VCR, it automatically sets the clock the first time you turn off the VCR. After that, whenever you turn off the VCR, it checks the time and adjusts the clock, even for Daylight Saving Time. The VCR sets the clock by picking up a time signal provided by some TV channels.

If you want to use the timer to record right away, or if the channels in your area do not carry time signals, set the clock manually. For details, see pages 34–35.

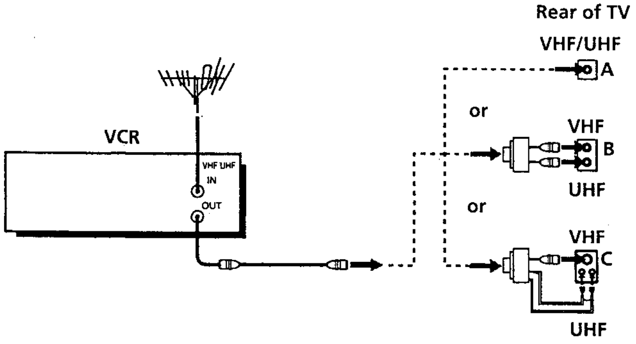
Hookup 3 Pages 16 to 18

Antenna hookup

Make the following connections if you're using an antenna (if you don't have cable TV).

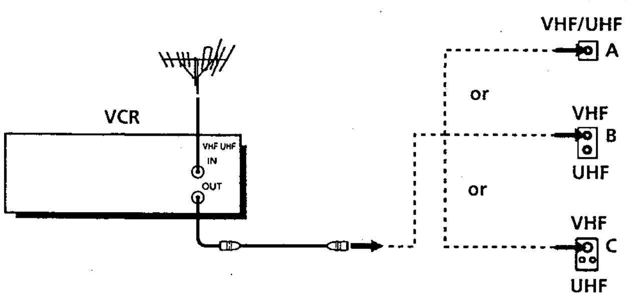
A Use this hookup if you're using:

- VHF/UHF antenna (you get channels 2–13 and channels 14 and higher)
- UHF-only antenna (you get channels 14 and higher)
- Separate VHF and UHF antennas



Match the type of connector on your TV: A, B, or C.

B Use this hookup if you're using a VHF-only antenna (you get channels 2–13 only)



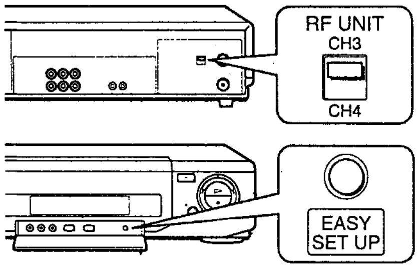
Match the type of connector on your TV: A, B, or C.

For connector types B and C, no UHF connection is required.

If you cannot connect your antenna cable to the VCR directly

If your antenna cable is a flat cable (300-ohm twin lead cable), attach an external antenna connector (not supplied) so you can connect the cable to the VHF/UHF IN connector. If you have separate cables for VHF and UHF antennas, you should use a U/V band mixer (not supplied). For details, see page 72.

Hookup 3: VCR setup

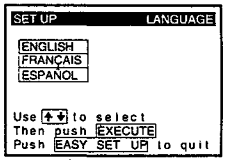


1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.

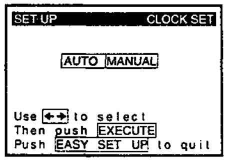
For details, see page 72. If you made A/V connections (from page 8), you can skip this step.

2 Press EASY SET UP on the VCR.

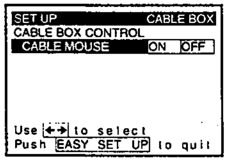
❶ The LANGUAGE menu appears. Change the on-screen display language to French (FRANÇAIS) or Spanish (ESPAÑOL) if desired, and press EXECUTE. For details, see page 29.


SET UP LANGUAGE
ENGLISH
FRANÇAIS
ESPAÑOL
Use ⬆⬇ to select
Then push EXECUTE
Push EASY SET UP to quit

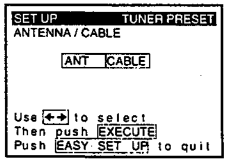
❷ The CLOCK SET menu appears. Select AUTO and press EXECUTE. For details, see page 30.


SET UP CLOCK SET
AUTO MANUAL
Use ⬅➡ to select
Then push EXECUTE
Push EASY SET UP to quit

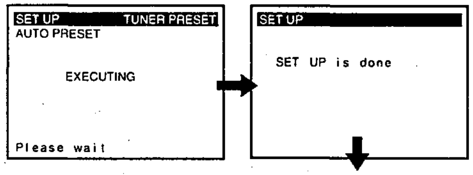
❸ The CABLE BOX CONTROL menu appears. Select OFF and press EXECUTE. For details, see page 36.


SET UP CABLE BOX
CABLE BOX CONTROL
CABLE MOUSE ON OFF
Use ⬅➡ to select
Push EASY SET UP to quit

❹ The TUNER PRESET menu appears. Set ANTENNA/CABLE to ANT and press EXECUTE. For details, see page 41.


SET UP TUNER PRESET
ANTENNA / CABLE
ANT CABLE
Use ⬅➡ to select
Then push EXECUTE
Push EASY SET UP to quit

❺ The AUTO PRESET starts.


SET UP TUNER PRESET
AUTO PRESET
EXECUTING
Please wait

SET UP
SET UP is done

Normal display

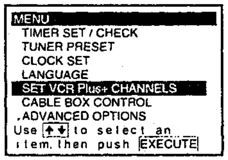
continued

Hookup 3: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details, see page 45.

2 If the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows. For details, see page 46.

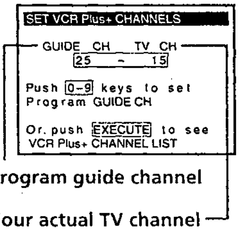
❶ Press MENU and select SET VCR Plus+ CHANNELS.


MENU
TIMER SET / CHECK
TUNER PRESET
CLOCK SET
LANGUAGE
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
ADVANCED OPTIONS

Use ↑↓ to select an item, then push EXECUTE

❷ Enter the program guide channel, then the channel you use on your TV.

❸ Press EXECUTE.


SET VCR Plus+ CHANNELS
GUIDE CH
TV CH
25 – 15
Program guide channel
Your actual TV channel

Push 0–9 keys to set Program GUIDE CH

Or, push EXECUTE to see VCR Plus+ CHANNEL LIST

Automatic clock setting

Once you've set up the VCR, it automatically sets the clock the first time you turn off the VCR. After that, whenever you turn off the VCR, it checks the time and adjusts the clock, even for Daylight Saving Time. The VCR sets the clock by picking up a time signal provided by some TV channels.

If you want to use the timer to record right away, or if the channels in your area do not carry time signals, set the clock manually. For details, see pages 34–35.

Hookup 4

Pages 19 to 21

Incompatible cable box with many scrambled channels

Recommended use

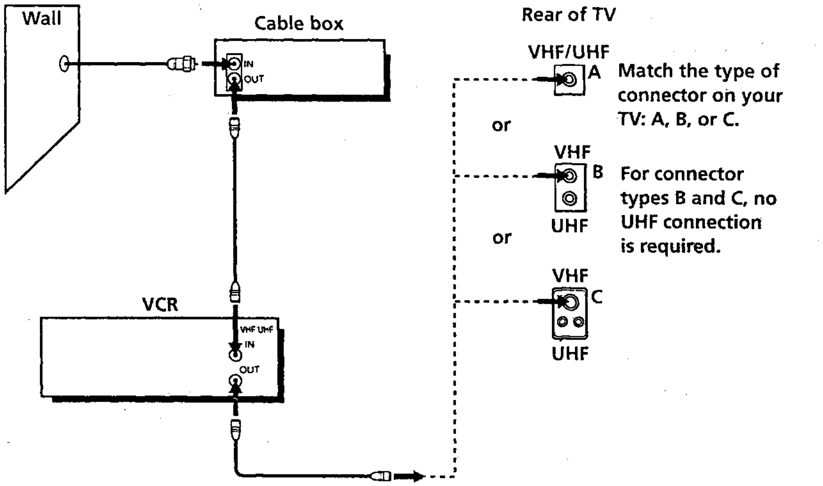
Use this hookup if your cable company cannot supply a cable box that is compatible with the VCR's cable box control feature, and your cable system scrambles all or most channels.

What you can do with this hookup

- Record any channel by selecting the channel on the cable box

What you can't do

- Record with the cable box turned off
- Record one channel while watching another channel
- Select channels directly on the VCR


Wall
Cable box
IN
OUT
VCR
VHF/UHF
IN
OUT
Rear of TV
VHF/UHF
A
or
VHF
B
UHF
or
VHF
C
UHF

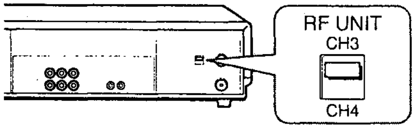
Match the type of connector on your TV: A, B, or C.

For connector types B and C, no UHF connection is required.

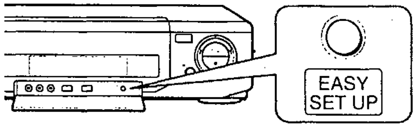
continued

Hookup 4: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.


RF UNIT
CH3
CH4

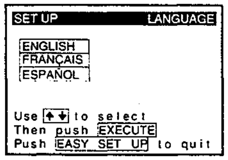
For details, see page 72. If you made A/V connections (from page 8), you can skip this step.



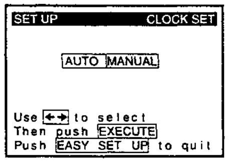
2 Turn on your cable box.

3 Press EASY SET UP on the VCR.

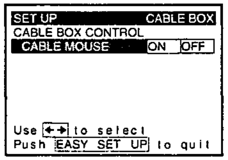
❶ The LANGUAGE menu appears. Change the on-screen display language to French (FRANÇAIS) or Spanish (ESPAÑOL) if desired, and press EXECUTE. For details, see page 29.


SET UP LANGUAGE
ENGLISH
FRANÇAIS
ESPAÑOL
Use ↑↓ to select
Then push EXECUTE
Push EASY SET UP to quit

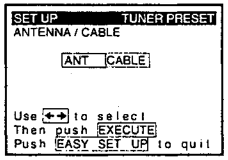
❷ The CLOCK SET menu appears. Select MANUAL and press EXECUTE. For details, see page 30.


SET UP CLOCK SET
AUTO MANUAL
Use ←→ to select
Then push EXECUTE
Push EASY SET UP to quit

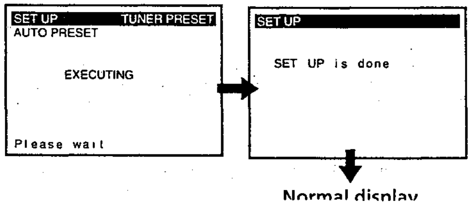
❸ The CABLE BOX CONTROL menu appears. Select OFF and press EXECUTE. For details, see page 36.


SET UP CABLE BOX
CABLE BOX CONTROL
CABLE MOUSE ON OFF
Use ←→ to select
Push EASY SET UP to quit

❹ The TUNER PRESET menu appears. Set ANTENNA/CABLE to ANT and press EXECUTE. For details, see page 41.


SET UP TUNER PRESET
ANTENNA / CABLE
ANT CABLE
Use ←→ to select
Then push EXECUTE
Push EASY SET UP to quit

❺ The AUTO PRESET starts.

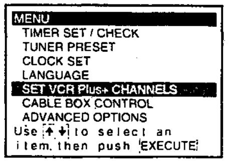

SET UP TUNER PRESET
AUTO PRESET
EXECUTING
Please wait
SET UP
SET UP is done
Normal display

Hookup 4: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details, see page 45.

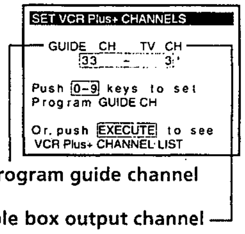
2 Enter all the channels you want to record and the cable box output channel (usually 2, 3, or 4). For details, see page 46.

❶ Press MENU and select SET VCR Plus+ CHANNELS.


MENU
TIMER SET / CHECK
TUNER PRESET
CLOCK SET
LANGUAGE
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
ADVANCED OPTIONS
Use ↑↓ to select an item, then push EXECUTE

❷ Enter the program guide channel, then the cable box output channel.

❸ Press EXECUTE.


SET VCR Plus+ CHANNELS
GUIDE CH TV CH
33 3
Push 0-9 keys to set Program GUIDE CH
Or, push EXECUTE to see VCR Plus+ CHANNEL LIST
Program guide channel
Cable box output channel

Automatic clock setting

To use the Auto Clock Set feature with this hookup, you need to manually select a channel that carries a time signal:

1 Tune the cable box to a channel that carries a time signal.

2 Select AUTO in the CLOCK SET menu to turn on the Auto Clock Set feature.

3 Turn off the VCR. It automatically sets the clock and adjusts for Daylight Saving Time by picking up the time signal.

If you want to use the timer to record right away, or if the channels in your area do not carry time signals, set the clock manually. For details, see pages 34–35.

Note

To use the automatic clock setting feature, leave the cable box on.

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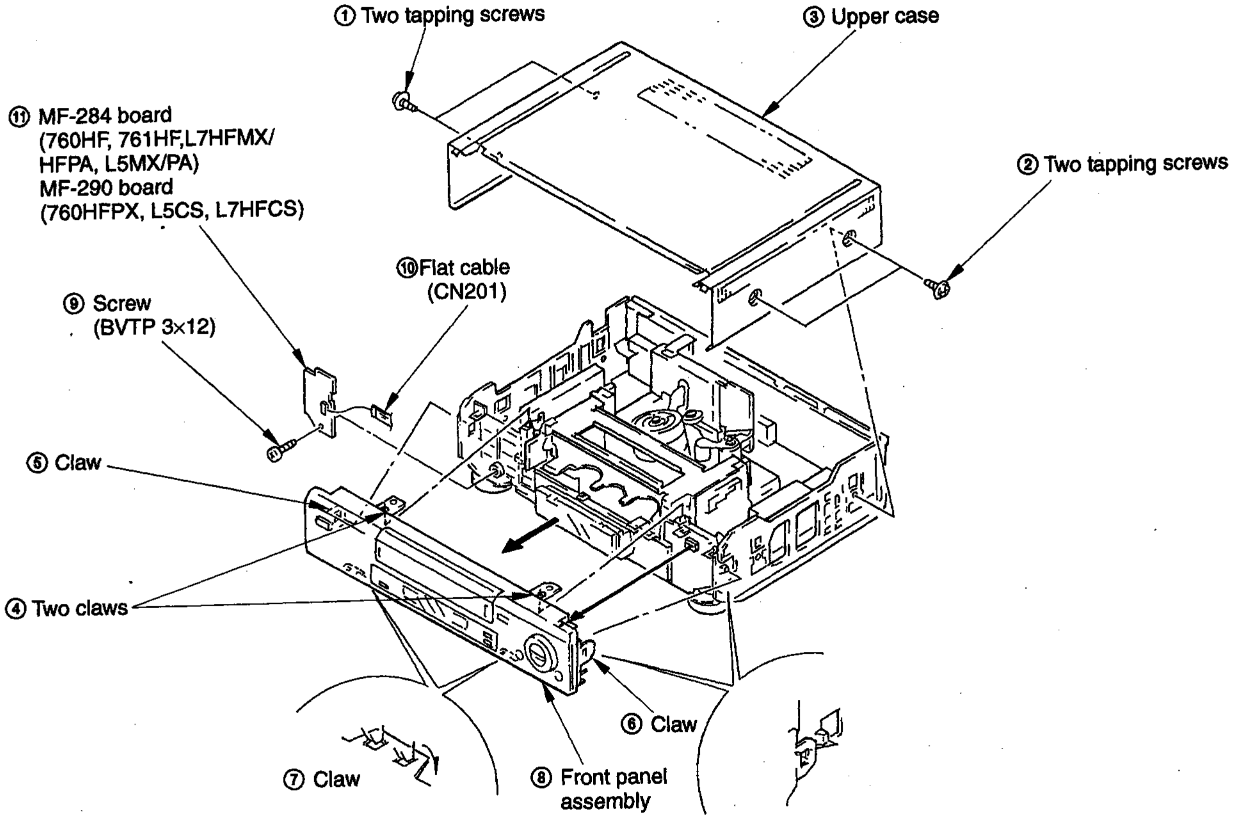
Quality Engineering Dept.

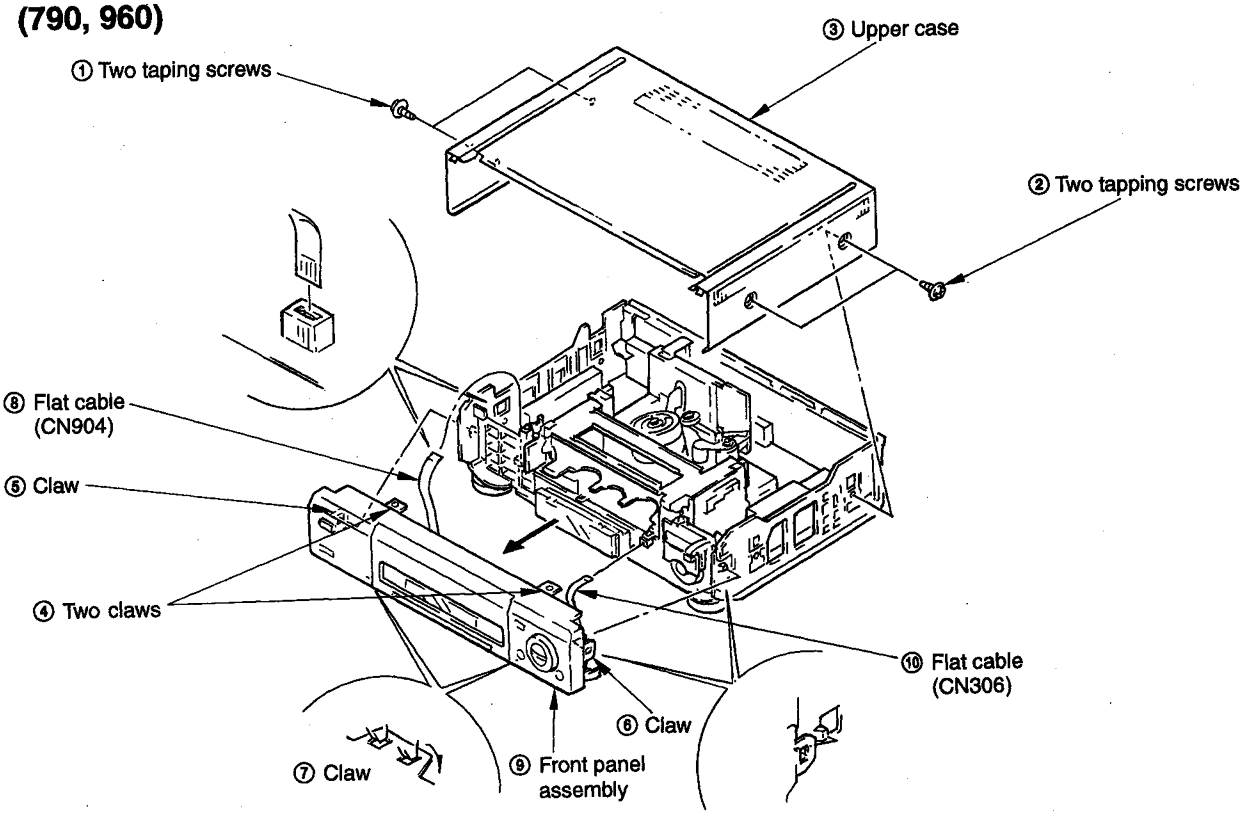
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

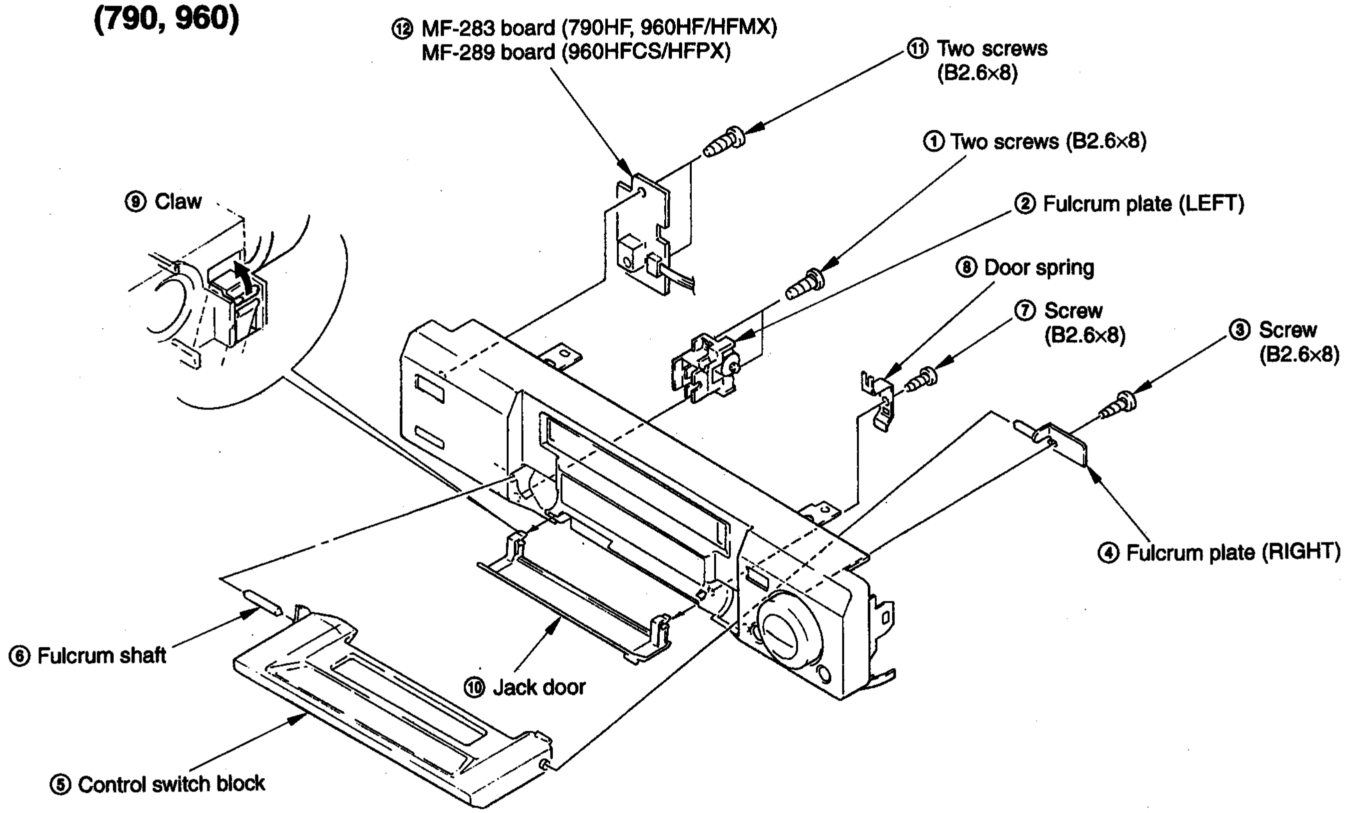
2-1. FRONT PANEL ASSEMBLY, CASE AND MF-284/290 BOARD (760, 761, L5, L7)


① Two tapping screws
③ Upper case
⑪ MF-284 board
(760HF, 761HF,L7HFMX/
HFPA, L5MX/PA)
MF-290 board
(760HFPX, L5CS, L7HFCS)
② Two tapping screws
⑩Flat cable
(CN201)
⑨ Screw
(BVTP 3×12)
⑤ Claw
④ Two claws
⑥ Claw
⑦ Claw
⑧ Front panel
assembly

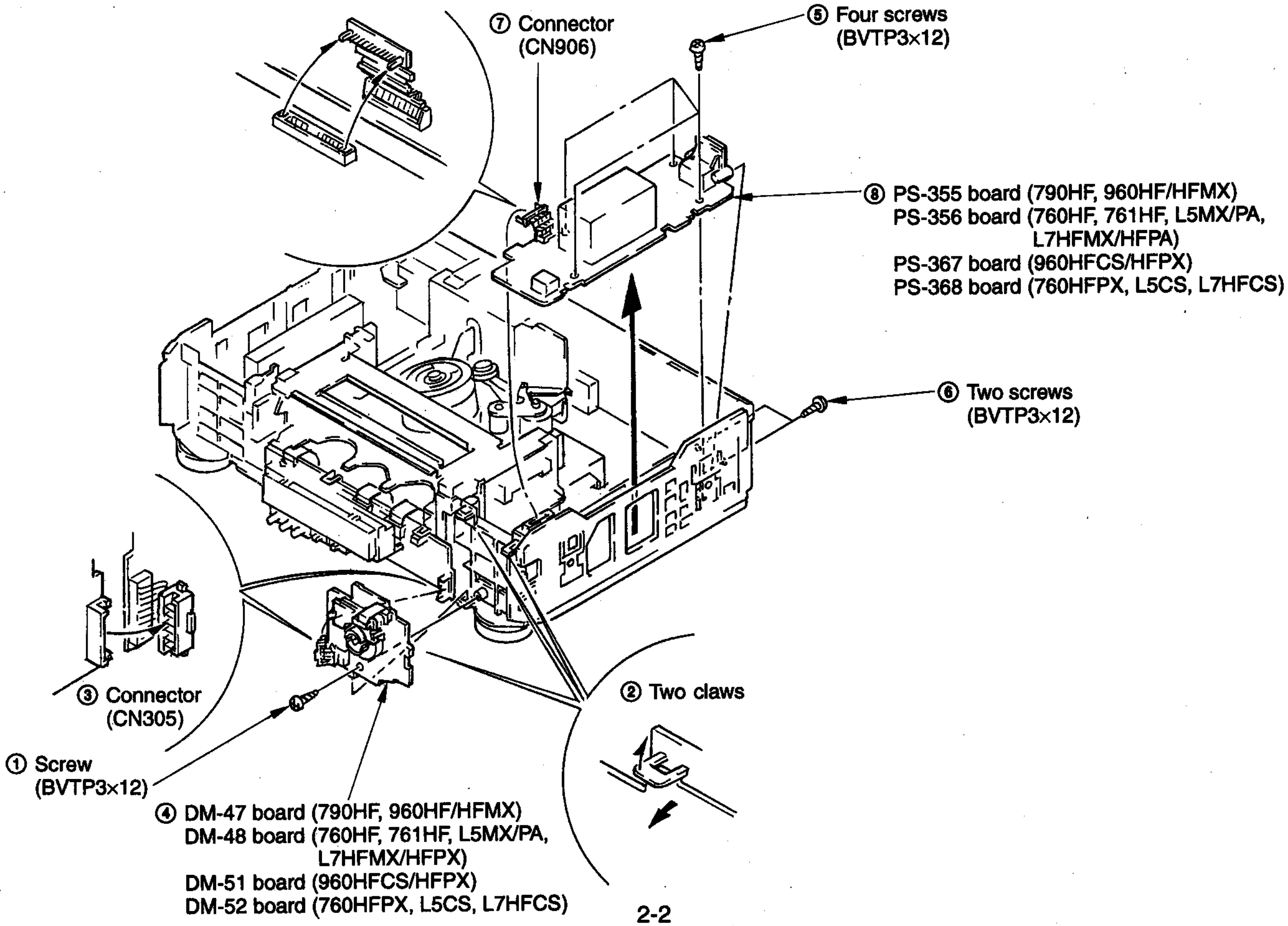
2-2. FRONT PANEL ASSEMBLY AND CASE (790, 960)


③ Upper case
① Two taping screws
② Two tapping screws
⑧ Flat cable
(CN904)
⑤ Claw
④ Two claws
⑩ Flat cable
(CN306)
⑥ Claw
⑦ Claw
⑨ Front panel
assembly

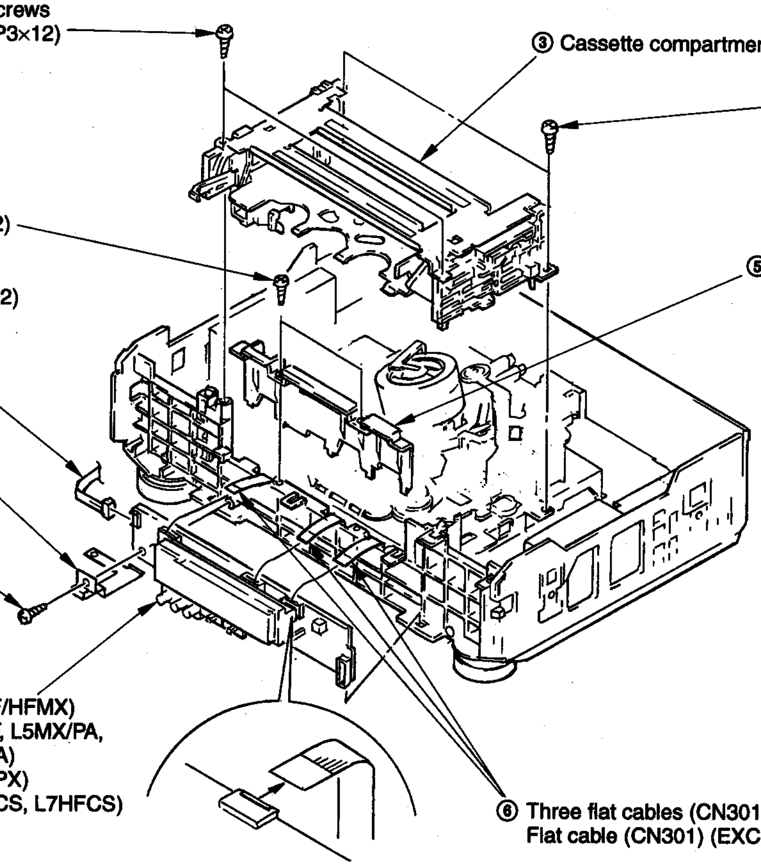
2-3. CONTROL SWITCH BLOCK AND MF-283/289 BOARD (790, 960)


⑫ MF-283 board (790HF, 960HF/HFMX)
MF-289 board (960HFCS/HFPX)
⑪ Two screws (B2.6×8)
① Two screws (B2.6×8)
⑨ Claw
② Fulcrum plate (LEFT)
⑧ Door spring
⑦ Screw (B2.6×8)
③ Screw (B2.6×8)
④ Fulcrum plate (RIGHT)
⑥ Fulcrum shaft
⑩ Jack door
⑤ Control switch block

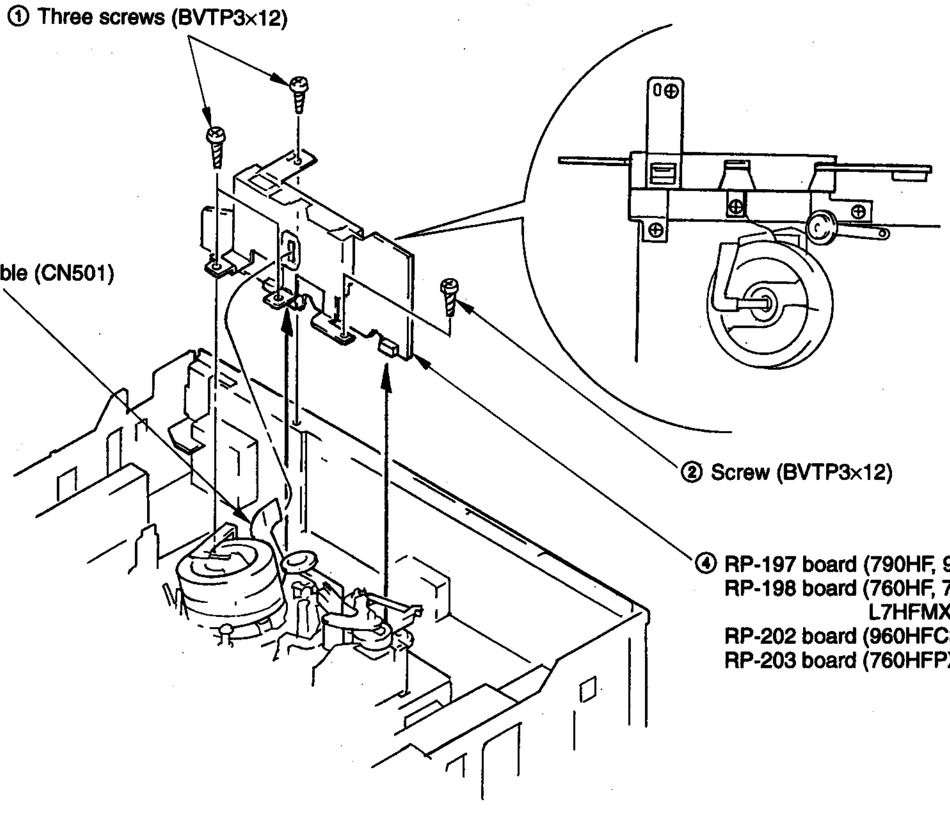
2-4. DM-47/48/51/52 BOARD AND PS-355, 356, 367, 368 BOARD


⑦ Connector (CN906)
⑤ Four screws (BVTP3×12)
⑧ PS-355 board (790HF, 960HF/HFMX)
PS-356 board (760HF, 761HF, L5MX/PA, L7HFMX/HFPA)
PS-367 board (960HFCS/HFPX)
PS-368 board (760HFPX, L5CS, L7HFCS)
⑥ Two screws (BVTP3×12)
② Two claws
③ Connector (CN305)
① Screw (BVTP3×12)
④ DM-47 board (790HF, 960HF/HFMX)
DM-48 board (760HF, 761HF, L5MX/PA, L7HFMX/HFPX)
DM-51 board (960HFCS/HFPX)
DM-52 board (760HFPX, L5CS, L7HFCS)

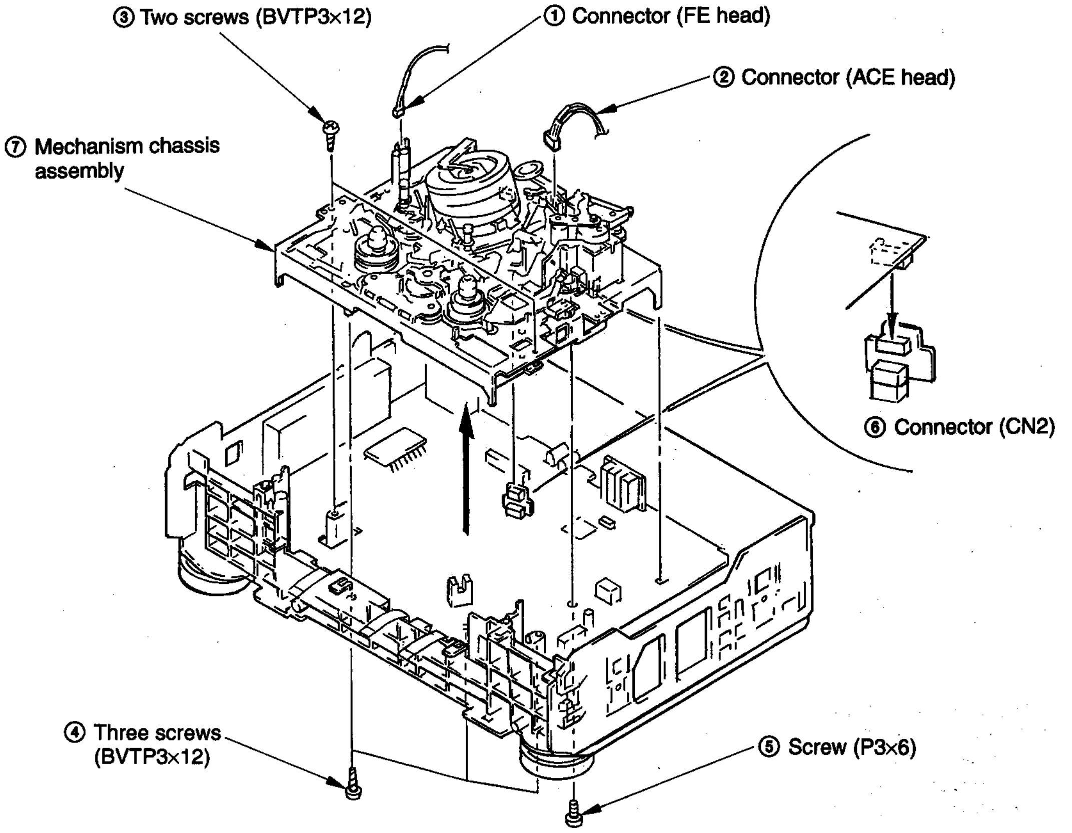
2-5. CASSETTE COMPARTMENT ASSEMBLY AND HI-23/24/36/37 BOARD


① Two screws
(BVTP3×12)
③ Cassette compartment assembly
② Two screws
(BV3×8)
④ Two screws
(BVTP3×12)
⑤ Holder (RF)
⑦ Connector (CN302)
(790, 960)
⑨ Ground plate
⑧ Screw
(BVTP3×12)
⑩ HI-23 board (790HF, 960HF/HFMX)
HI-24 board (760HF, 761HF, L5MX/PA, L7HFMX/HFPA)
HI-36 board (960HFCS/HFPX)
HI-37 board (760HFPX, L5CS, L7HFCS)
⑥ Three flat cables (CN301, 303, 304) (790, 960)
Flat cable (CN301) (EXCEPT 790, 960)

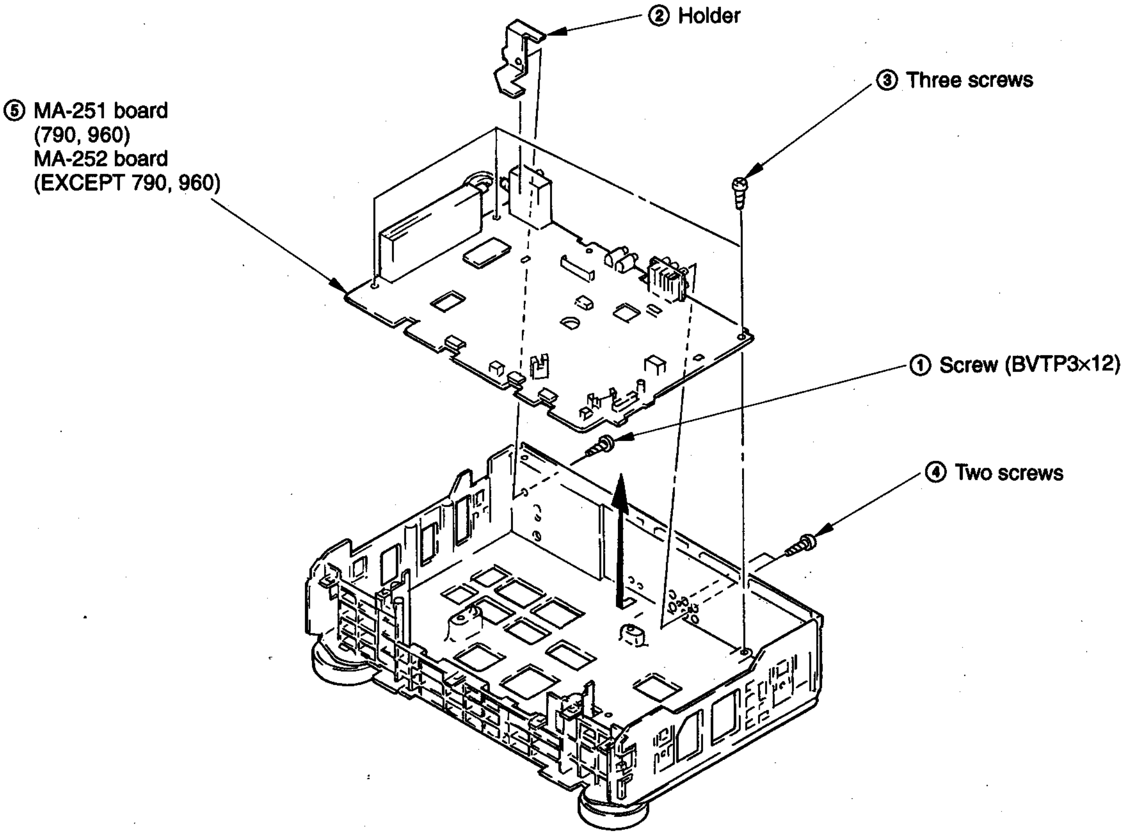
2-6. RP-197/198/202/203 BOARD


① Three screws (BVTP3×12)
③ Flexible flat cable (CN501)
② Screw (BVTP3×12)
④ RP-197 board (790HF, 960HF/HFMX)
RP-198 board (760HF, 761HF, L5MX/PA, L7HFMX/HFPA)
RP-202 board (960HFCS/HFPX)
RP-203 board (760HFPX, L5CS, L7HFCS)

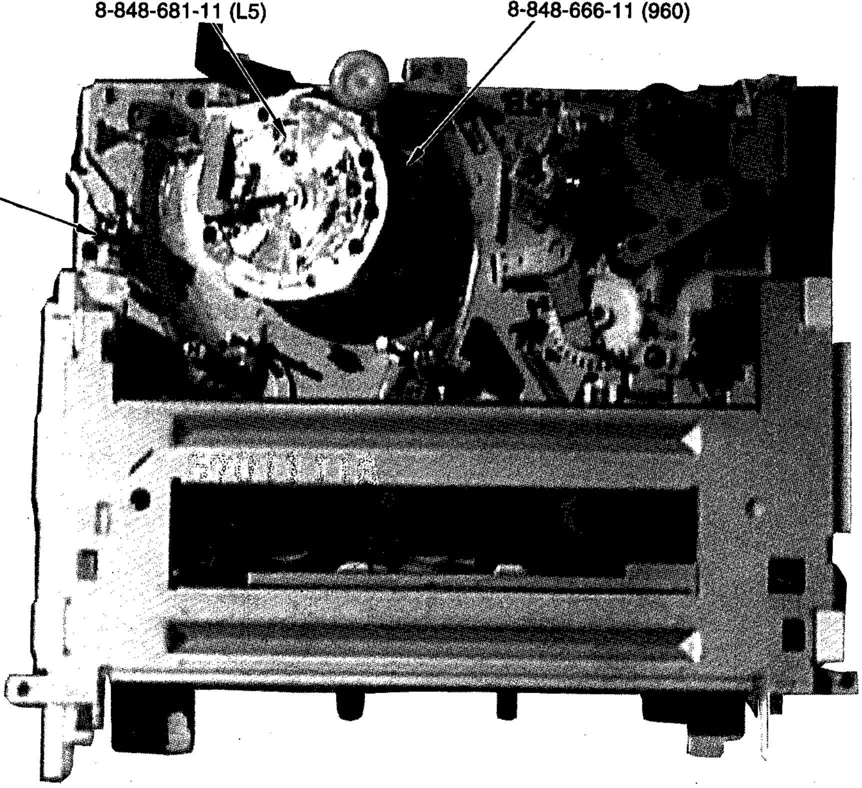
2-7. MECHANISM CHASSIS ASSEMBLY


③ Two screws (BVTP3×12)
① Connector (FE head)
② Connector (ACE head)
⑦ Mechanism chassis assembly
⑥ Connector (CN2)
④ Three screws (BVTP3×12)
⑤ Screw (P3×6)

2-8. MA-251/252 BOARD


② Holder
③ Three screws
⑤ MA-251 board (790, 960) MA-252 board (EXCEPT 790, 960)
① Screw (BVTP3×12)
④ Two screws

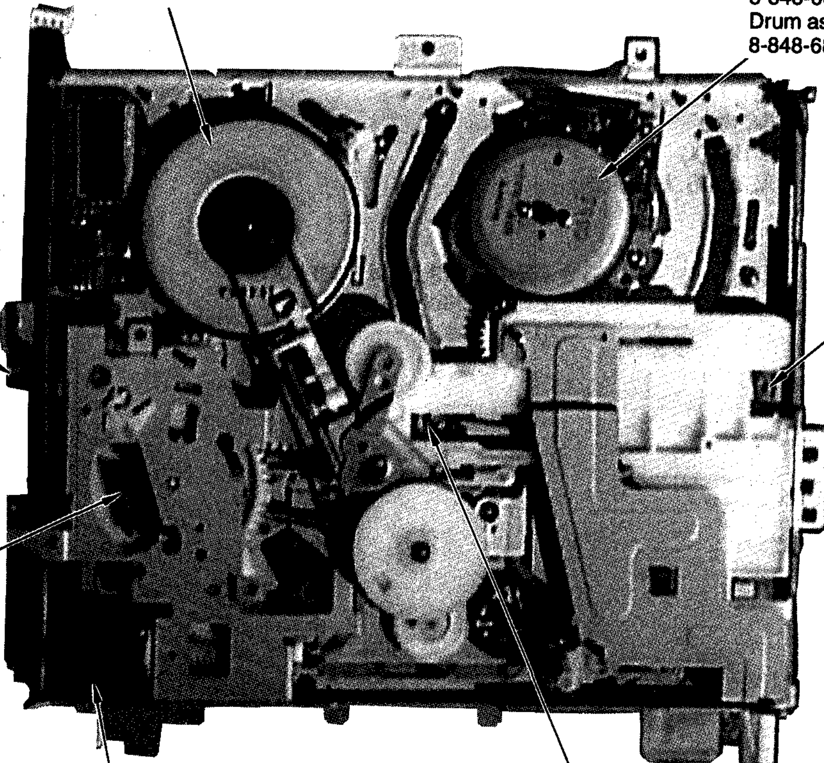
2-9. INTERNAL VIEWS



Rotary upper drum assembly
(DZR-45-R) 8-848-576-02
(760, 761, 790, L7)
Rotary upper drum assembly (DZR-51-R)
8-848-594-02 (960)
Drum assembly
(DZH-73B/Q-RP)
8-848-681-11 (L5)

Lower drum assembly (DZL-45B/J-RP)
8-848-658-11 (760, 761, 790, L7)
Lower drum assembly (DZH-51B/J-RP)
8-848-666-11 (960)

FE head
1-500-144-11



M902
Capstan motor (SCV-0801A/Z-NP)
1-698-409-11

Lower drum assembly (DZL-45B/J-RP)
8-848-658-11 (760, 761, 790, L7)
Lower drum assembly (DZH-51B/J-RP)
8-848-666-11 (960)
Drum assembly (DZH-73B/Q-RP)
8-848-681-11

Q261
Tape top sensor
8-729-025-92

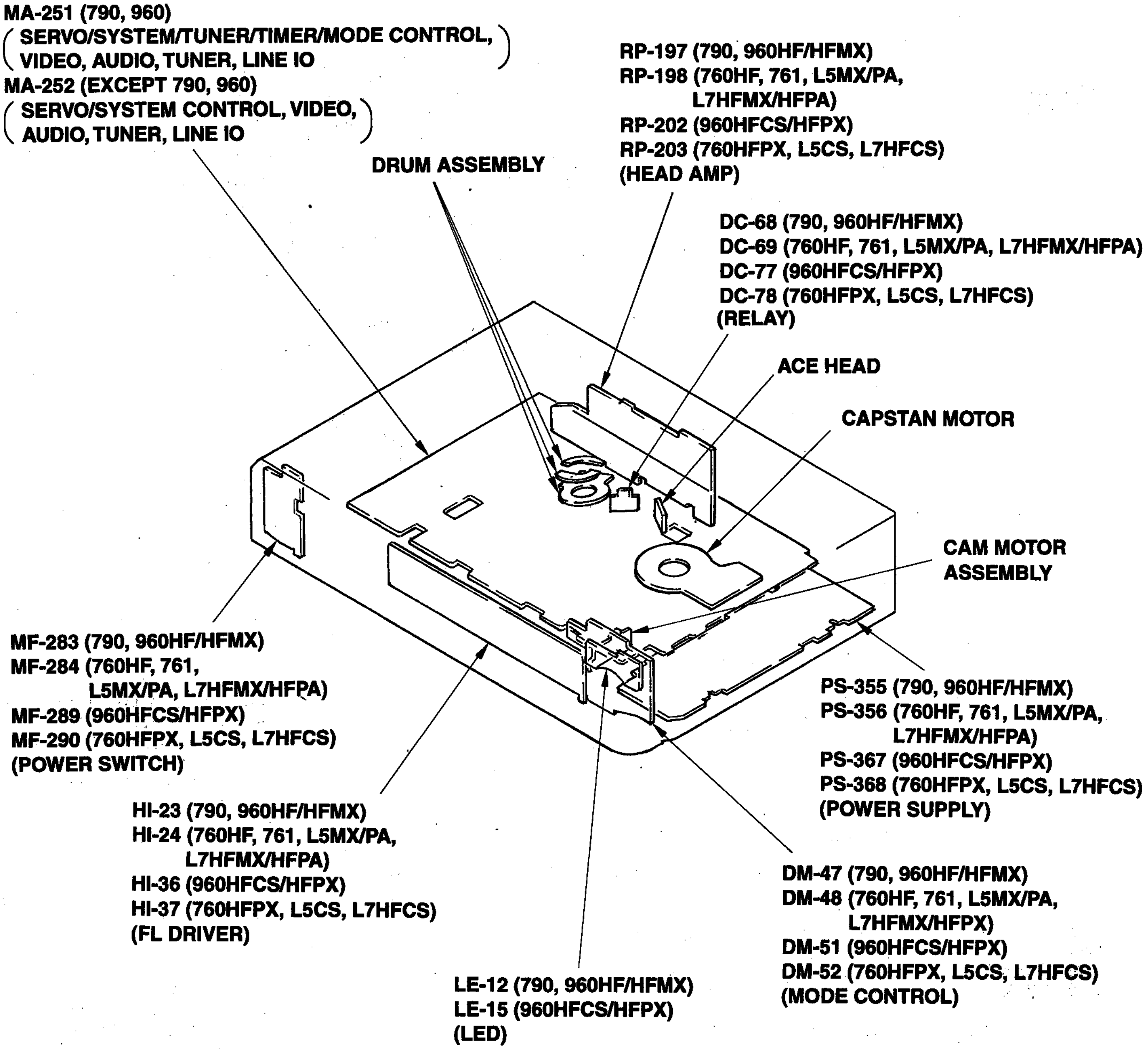
Q262
Tape end sensor
8-729-025-92

Rotary switch
1-762-076-11

M903
cam motor assembly
X-3943-883-1

D261
Tape top/end LED
8-719-048-26

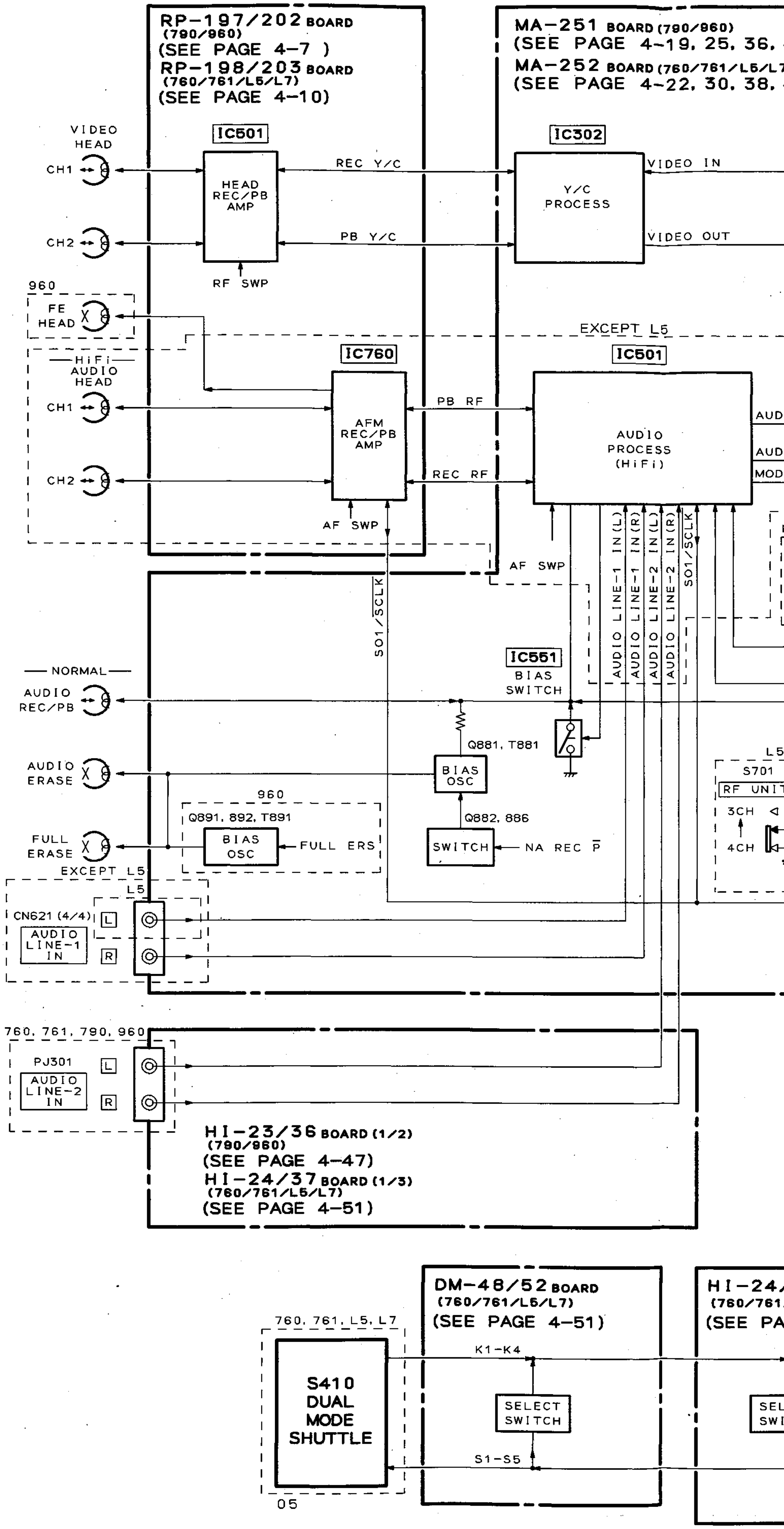
2-10. CIRCUIT BOARDS LOCATION

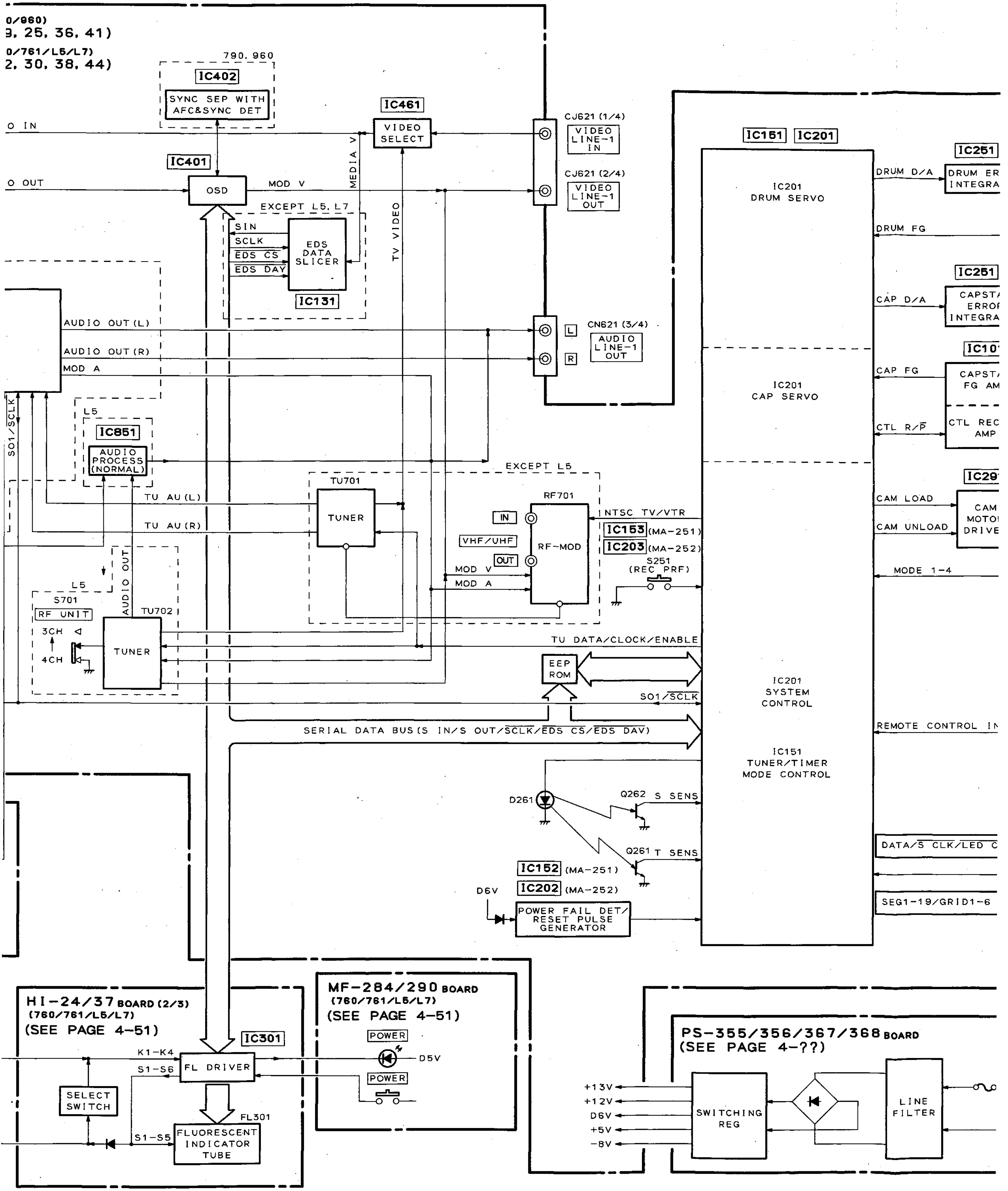

MA-251 (790, 960)
(SERVO/SYSTEM/TUNER/TIMER/MODE CONTROL, VIDEO, AUDIO, TUNER, LINE IO)
MA-252 (EXCEPT 790, 960)
(SERVO/SYSTEM CONTROL, VIDEO, AUDIO, TUNER, LINE IO)
DRUM ASSEMBLY
RP-197 (790, 960HF/HFMX)
RP-198 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
RP-202 (960HFCS/HFPX)
RP-203 (760HFPX, L5CS, L7HFCS)
(HEAD AMP)
DC-68 (790, 960HF/HFMX)
DC-69 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
DC-77 (960HFCS/HFPX)
DC-78 (760HFPX, L5CS, L7HFCS)
(RELAY)
ACE HEAD
CAPSTAN MOTOR
CAM MOTOR ASSEMBLY
MF-283 (790, 960HF/HFMX)
MF-284 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
MF-289 (960HFCS/HFPX)
MF-290 (760HFPX, L5CS, L7HFCS)
(POWER SWITCH)
PS-355 (790, 960HF/HFMX)
PS-356 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
PS-367 (960HFCS/HFPX)
PS-368 (760HFPX, L5CS, L7HFCS)
(POWER SUPPLY)
HI-23 (790, 960HF/HFMX)
HI-24 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
HI-36 (960HFCS/HFPX)
HI-37 (760HFPX, L5CS, L7HFCS)
(FL DRIVER)
DM-47 (790, 960HF/HFMX)
DM-48 (760HF, 761, L5MX/PA, L7HFMX/HFPX)
DM-51 (960HFCS/HFPX)
DM-52 (760HFPX, L5CS, L7HFCS)
(MODE CONTROL)
LE-12 (790, 960HF/HFMX)
LE-15 (960HFCS/HFPX)
(LED)

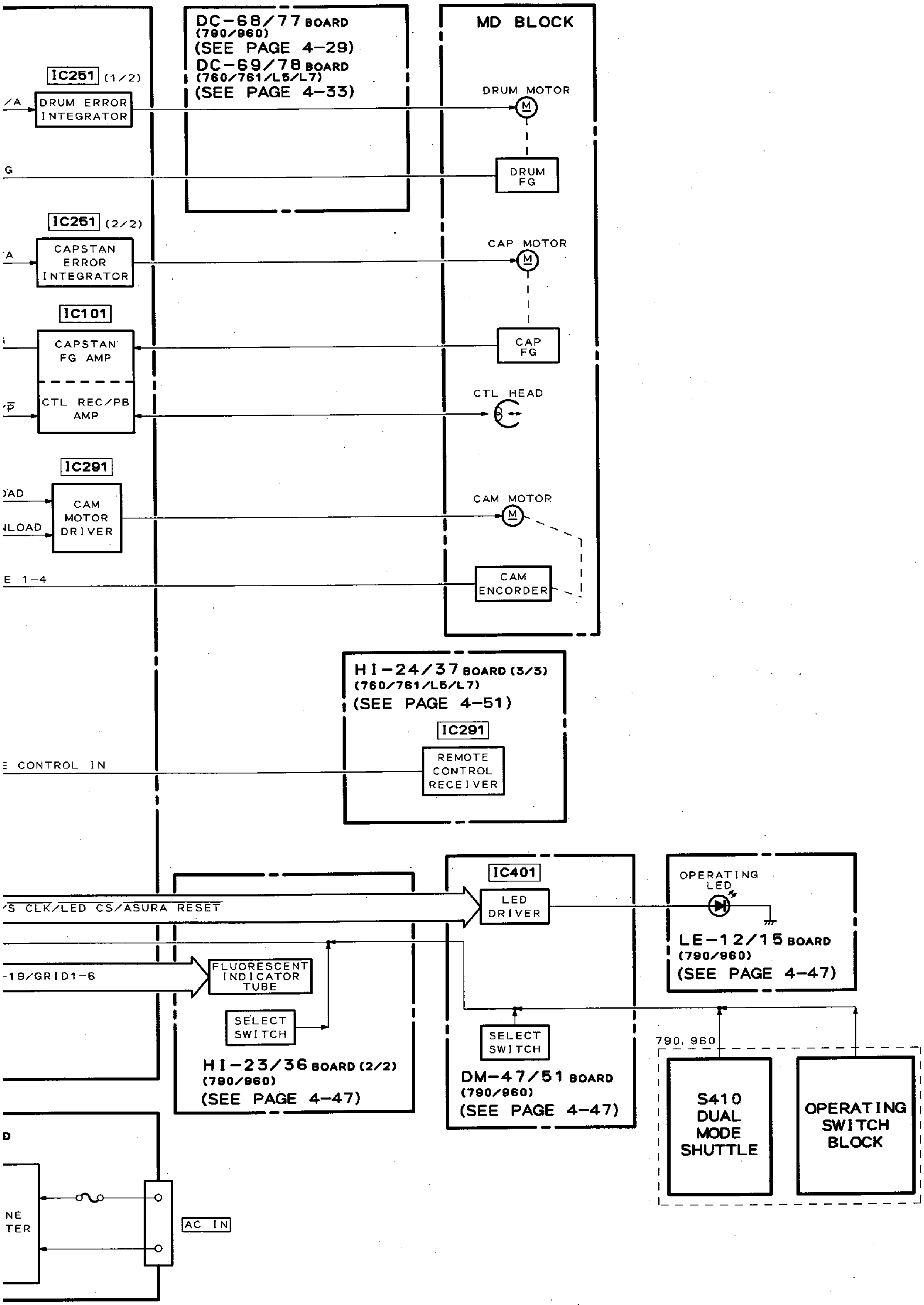
SECTION 3

BLOCK DIAGRAMS

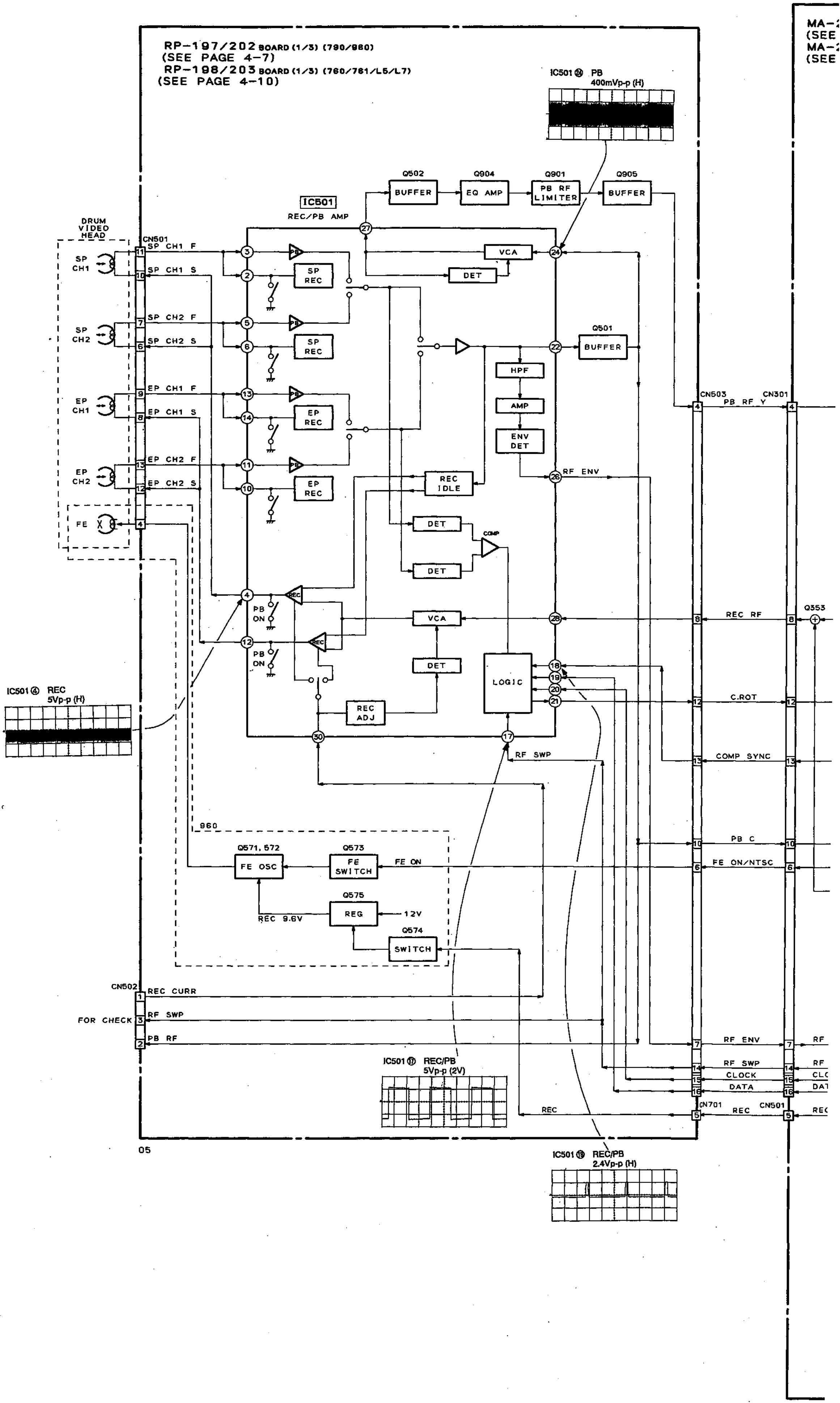
3-1. OVERALL BLOCK DIAGRAM


RP-197/202 BOARD (790/960) (SEE PAGE 4-7)
RP-198/203 BOARD (760/761/L5/L7) (SEE PAGE 4-10)
MA-251 BOARD (790/960) (SEE PAGE 4-19, 25, 36,
MA-252 BOARD (760/761/L5/L7 (SEE PAGE 4-22, 30, 38,
VIDEO HEAD
CH1
CH2
IC501
HEAD REC/PB AMP
RF SWP
REC Y/C
PB Y/C
IC302
Y/C PROCESS
VIDEO IN
VIDEO OUT
960
FE HEAD
HiFi AUDIO HEAD
CH1
CH2
EXCEPT L5
IC760
AFM REC/PB AMP
AF SWP
PB RF
REC RF
IC501
AUDIO PROCESS (HiFi)
AUD
AUD
MOD
AF SWP
SO1/SCLK
AUDIO LINE-1 IN(L)
AUDIO LINE-1 IN(R)
AUDIO LINE-2 IN(L)
AUDIO LINE-2 IN(R)
SO1/SCLK
IC551
BIAS SWITCH
NORMAL
AUDIO REC/PB
Q881, T881
AUDIO ERASE
BIAS OSC
960
Q891, 892, T891
BIAS OSC
FULL ERS
Q882, 886
SWITCH
NA REC P̄
FULL ERASE
EXCEPT L5
L5
CN621 (4/4)
AUDIO LINE-1 IN
L
R
L5
S701
RF UNIT
3CH
4CH
760, 761, 790, 960
PJ301
AUDIO LINE-2 IN
L
R
HI-23/36 BOARD (1/2) (790/960) (SEE PAGE 4-47)
HI-24/37 BOARD (1/3) (760/761/L5/L7) (SEE PAGE 4-51)
DM-48/52 BOARD (760/761/L5/L7) (SEE PAGE 4-51)
HI-24/
(760/761
(SEE PA
760, 761, L5, L7
S410 DUAL MODE SHUTTLE
05
K1-K4
SELECT SWITCH
S1-S5
SEL SWI

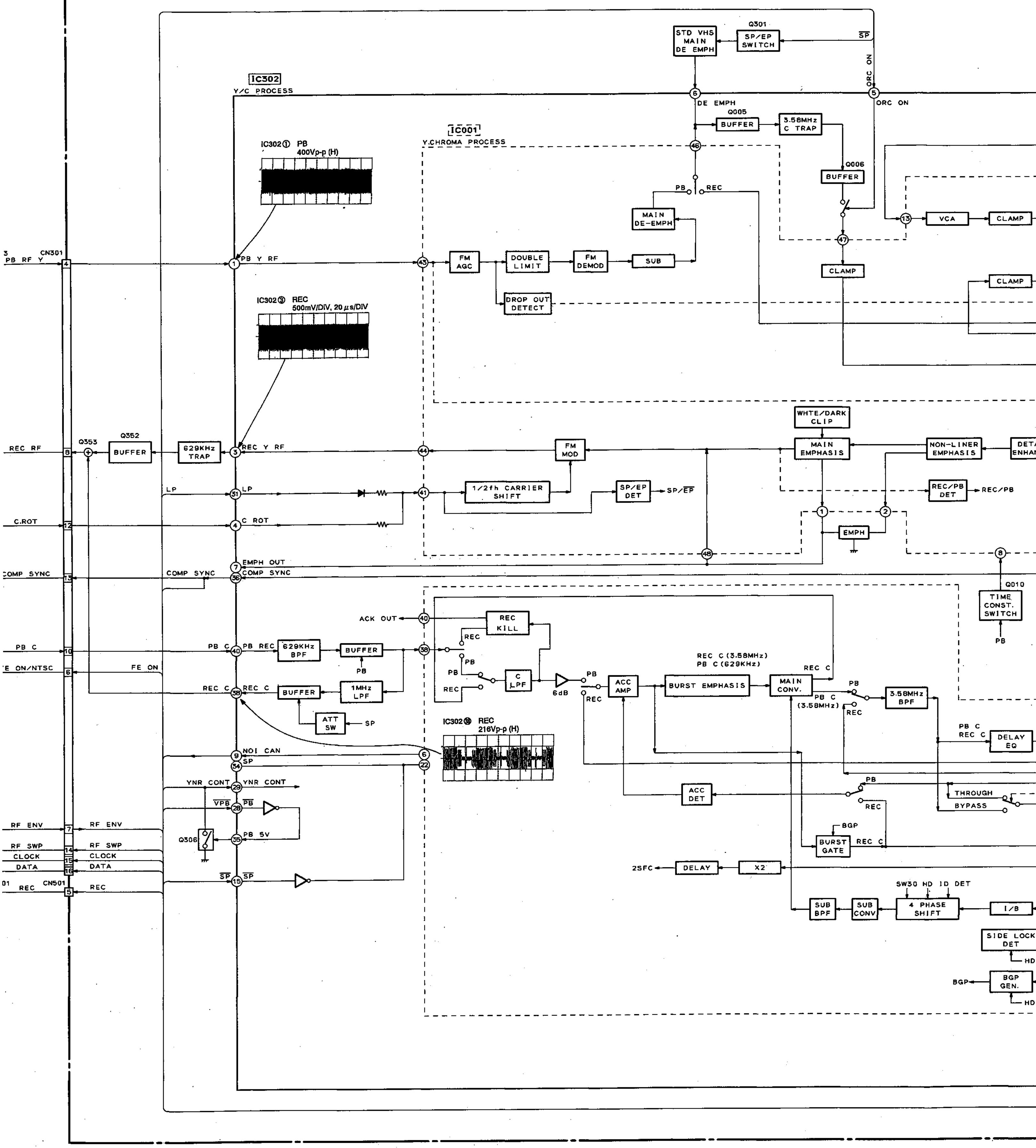

0/960)
9, 25, 36, 41)
0/761/L5/L7)
2, 30, 38, 44)
790, 960
IC402
SYNC SEP WITH AFC&SYNC DET
IC461
VIDEO SELECT
O IN
O OUT
IC401
OSD
MOD V
MEDIA V
TV VIDEO
EXCEPT L5, L7
SIN
SCLK
EDS CS
EDS DAY
EDS DATA SLICER
IC131
CJ621 (1/4)
VIDEO LINE-1 IN
CJ621 (2/4)
VIDEO LINE-1 OUT
CN621 (3/4)
L
R
AUDIO LINE-1 OUT
AUDIO OUT (L)
AUDIO OUT (R)
MOD A
SO1/SCLK
L5
IC851
AUDIO PROCESS (NORMAL)
TU AU (L)
TU AU (R)
EXCEPT L5
TU701
TUNER
RF701
IN
VHF/UHF
OUT
RF-MOD
MOD V
MOD A
AUDIO OUT
L5
S701
RF UNIT
3CH
4CH
TU702
TUNER
NTSC TV/VTR
IC153 (MA-251)
IC203 (MA-252)
S251 (REC PRF)
TU DATA/CLOCK/ENABLE
EEP ROM
SO1/SCLK
SERIAL DATA BUS (S IN/S OUT/SCLK/EDS CS/EDS DAV)
IC151
IC201
IC201 DRUM SERVO
IC201 CAP SERVO
IC201 SYSTEM CONTROL
IC151 TUNER/TIMER MODE CONTROL
DRUM D/A
DRUM FG
CAP D/A
CAP FG
CTL R/P
CAM LOAD
CAM UNLOAD
MODE 1-4
REMOTE CONTROL IN
DATA/S CLK/LED C
SEG1-19/GRID1-6
IC251
DRUM ER INTEGRA
IC251
CAPST ERROR INTEGRA
IC10
CAPST FG AM
CTL REC AMP
IC29
CAM MOTO DRIVE
D261
Q262 S SENS
Q261 T SENS
IC152 (MA-251)
IC202 (MA-252)
D6V
POWER FAIL DET/ RESET PULSE GENERATOR
HI-24/37 BOARD (2/3)
(760/761/L5/L7)
(SEE PAGE 4-51)
IC301
K1-K4
S1-S6
FL DRIVER
SELECT SWITCH
FL301
S1-S5
FLUORESCENT INDICATOR TUBE
MF-284/290 BOARD
(760/761/L5/L7)
(SEE PAGE 4-51)
POWER
D5V
POWER
PS-355/356/367/368 BOARD
(SEE PAGE 4-??)
+13V
+12V
D6V
+5V
-8V
SWITCHING REG
LINE FILTER


DC-68/77 BOARD
(790/960)
(SEE PAGE 4-29)
DC-69/78 BOARD
(760/761/L5/L7)
(SEE PAGE 4-33)
MD BLOCK
IC251 (1/2)
DRUM ERROR INTEGRATOR
/A
DRUM MOTOR
M
DRUM FG
G
IC251 (2/2)
CAPSTAN ERROR INTEGRATOR
'A
CAP MOTOR
M
IC101
CAPSTAN FG AMP
CAP FG
CTL REC/PB AMP
/P̄
CTL HEAD
IC291
CAM MOTOR DRIVER
)AD
ILOAD
CAM MOTOR
M
CAM ENCORDER
E 1-4
HI-24/37 BOARD (3/3)
(760/761/L5/L7)
(SEE PAGE 4-51)
IC291
REMOTE CONTROL RECEIVER
CONTROL IN
IC401
LED DRIVER
'S CLK/LED CS/ASURA RESET
OPERATING LED
LE-12/15 BOARD
(790/960)
(SEE PAGE 4-47)
-19/GRID1-6
FLUORESCENT INDICATOR TUBE
SELECT SWITCH
HI-23/36 BOARD (2/2)
(790/960)
(SEE PAGE 4-47)
SELECT SWITCH
DM-47/51 BOARD
(790/960)
(SEE PAGE 4-47)
790, 960
S410 DUAL MODE SHUTTLE
OPERATING SWITCH BLOCK
D
NE
TER
AC IN

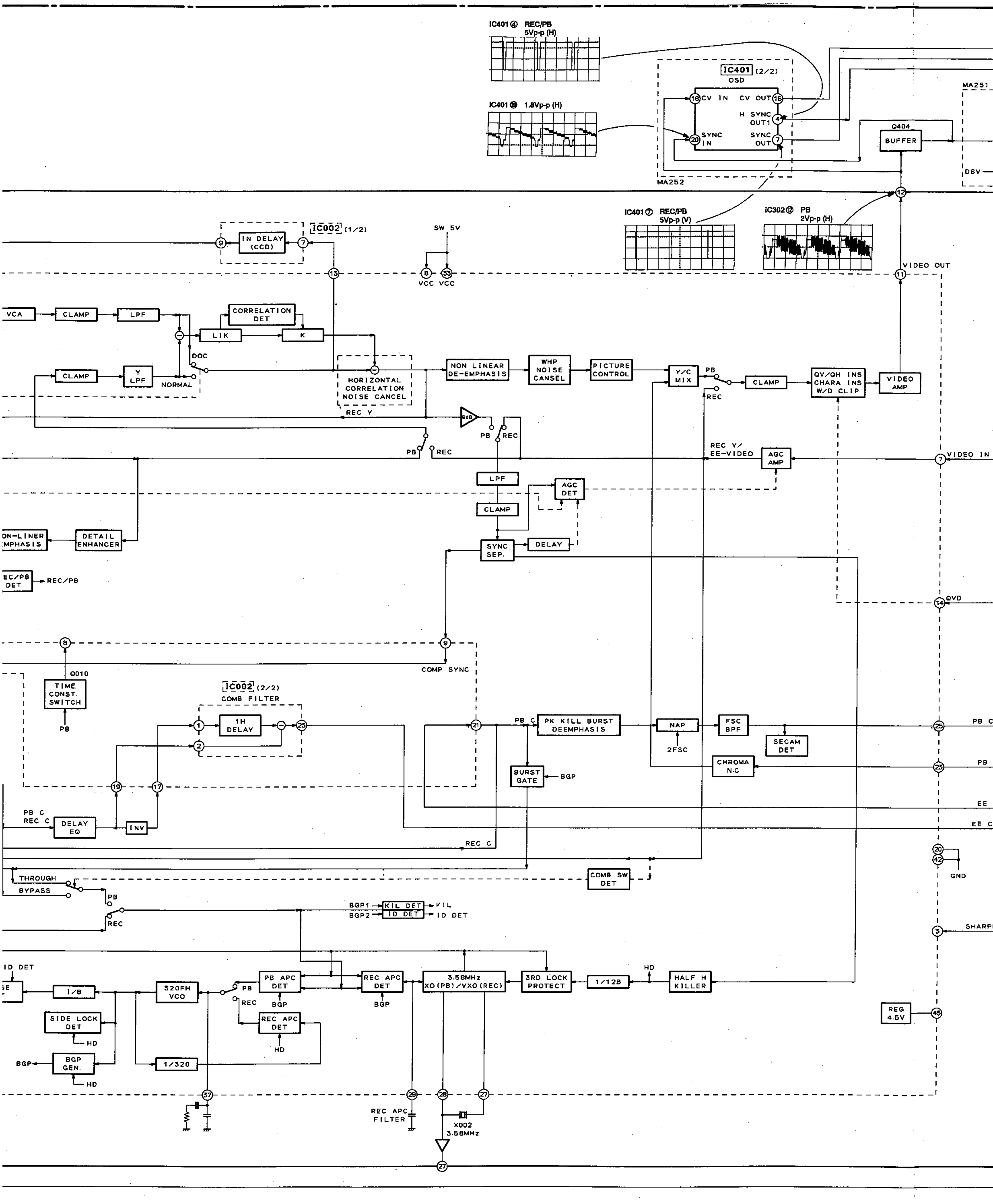
3-2. VIDEO BLOCK DIAGRAM

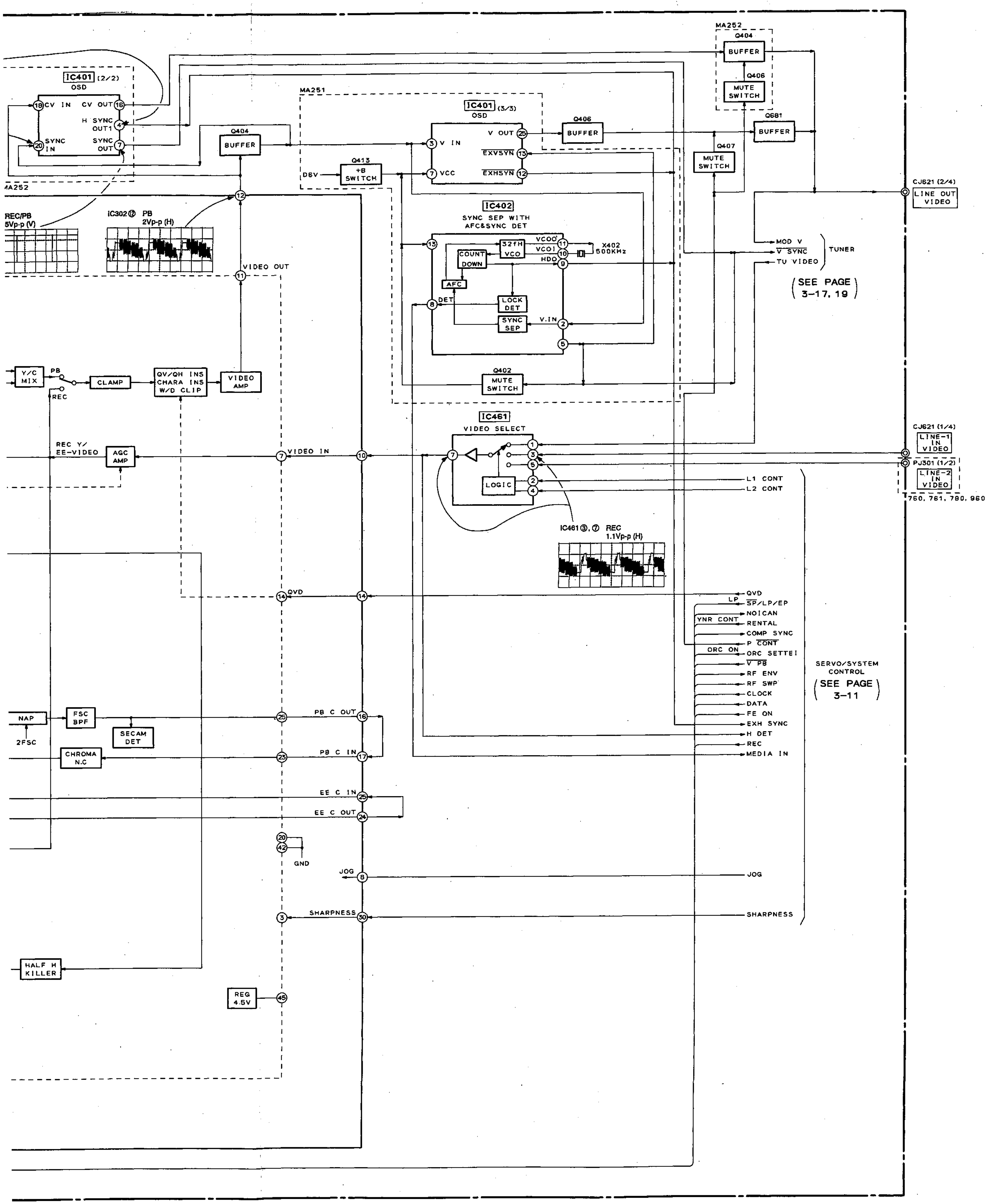

RP-197/202 BOARD (1/3) (790/960)
(SEE PAGE 4-7)
RP-198/203 BOARD (1/3) (760/761/L5/L7)
(SEE PAGE 4-10)
IC501 ㉔ PB
400mVp-p (H)
Q502
BUFFER
Q904
EQ AMP
Q901
PB RF LIMITER
Q905
BUFFER
IC501
REC/PB AMP
DRUM VIDEO HEAD
CN501
SP CH1 F
SP CH1 S
SP CH1
SP CH2 F
SP CH2 S
SP CH2
EP CH1 F
EP CH1 S
EP CH1
EP CH2 F
EP CH2 S
EP CH2
FE
PB
SP REC
EP REC
VCA
DET
Q501
BUFFER
HPF
AMP
ENV DET
RF ENV
REC IDLE
COMP
REC
PB ON
LOGIC
REC ADJ
RF SWP
IC501 ④ REC
5Vp-p (H)
960
Q571, 572
FE OSC
Q573
FE SWITCH
FE ON
Q575
REG
REC 9.6V
12V
Q574
SWITCH
CN502
REC CURR
FOR CHECK
RF SWP
PB RF
IC501 ⑰ REC/PB
5Vp-p (2V)
IC501 ⑲ REC/PB
2.4Vp-p (H)
CN503
CN301
PB RF Y
REC RF
Q353
C.ROT
COMP SYNC
PB C
FE ON/NTSC
RF ENV
RF SWP
CLOCK
DATA
CN701
CN501
REC
MA-
(SEE
MA-
(SEE
RF
RF
CLC
DAT
REC
05

MA-251 BOARD (1/5) (790/960)
(SEE PAGE 4-19)
MA-252 BOARD (1/6) (760/761/L5/L7)
(SEE PAGE 4-22)



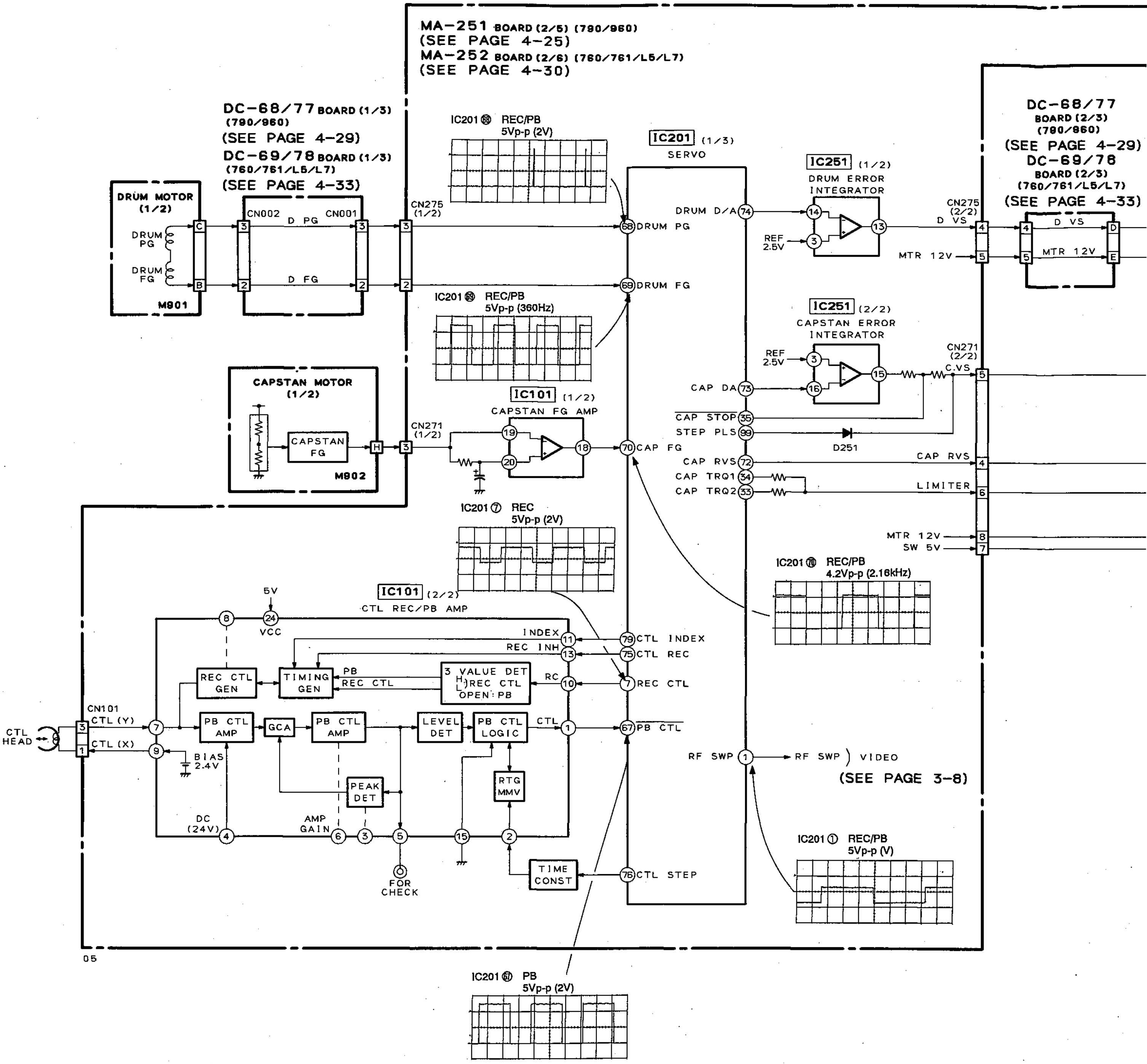
IC302
Y/C PROCESS
IC001
Y.CHROMA PROCESS
STD VHS MAIN DE EMPH
Q301
SP/EP SWITCH
SP
ORC ON
DE EMPH
Q005
BUFFER
3.58MHz C TRAP
Q006
BUFFER
PB
REC
MAIN DE-EMPH
VCA
CLAMP
CLAMP
CLAMP
IC302① PB
400Vp-p (H)
IC302③ REC
500mV/DIV, 20 μs/DIV
CN301
PB RF Y
PB Y RF
FM AGC
DOUBLE LIMIT
FM DEMOD
SUB
DROP OUT DETECT
WHTE/DARK CLIP
MAIN EMPHASIS
NON-LINER EMPHASIS
REC RF
Q353
Q352
BUFFER
629KHz TRAP
REC Y RF
FM MOD
LP
1/2fh CARRIER SHIFT
SP/EP DET
SP/EP
REC/PB DET
REC/PB
C.ROT
C ROT
EMPH
EMPH OUT
COMP SYNC
Q010
TIME CONST. SWITCH
ACK OUT
REC KILL
PB C
PB REC
629KHz BPF
BUFFER
C LPF
6dB
ACC AMP
REC C (3.58MHz)
PB C (629KHz)
BURST EMPHASIS
MAIN CONV.
REC C
PB C (3.58MHz)
3.58MHz BPF
FE ON/NTSC
FE ON
REC C
BUFFER
1MHz LPF
ATT SW
SP
IC302㊳ REC
216Vp-p (H)
NOI CAN
DELAY EQ
THROUGH
BYPASS
YNR CONT
ACC DET
VPB
PB 5V
Q306
RF ENV
RF SWP
CLOCK
DATA
CN501
REC
BGP
BURST GATE
2SFC
DELAY
X2
SW30 HD ID DET
SUB BPF
SUB CONV
4 PHASE SHIFT
1/8
SIDE LOCK DET
HD
BGP GEN.


IC401④ REC/PB
5Vp-p (H)
IC401⑳ 1.8Vp-p (H)
IC401 (2/2)
OSD
⑱ CV IN
CV OUT ⑯
H SYNC OUT1 ④
⑳ SYNC IN
SYNC OUT ⑦
MA252
MA251
Q404
BUFFER
D6V
⑫
IC401⑦ REC/PB
5Vp-p (V)
IC302⑫ PB
2Vp-p (H)
IC002 (1/2)
⑨ IN DELAY (CCD) ⑦
⑬
SW 5V
⑧ VCC
㉝ VCC
VIDEO OUT
⑪
VCA
CLAMP
LPF
CORRELATION DET
LIK
K
DOC
CLAMP
Y LPF
NORMAL
HORIZONTAL CORRELATION NOISE CANCEL
NON LINEAR DE-EMPHASIS
WHP NOISE CANSEL
PICTURE CONTROL
Y/C MIX
PB
REC
CLAMP
QV/QH INS CHARA INS W/D CLIP
VIDEO AMP
REC Y
6dB
PB
REC
PB
REC
REC Y/ EE-VIDEO
AGC AMP
⑦ VIDEO IN
LPF
AGC DET
CLAMP
ON-LINER EMPHASIS
DETAIL ENHANCER
SYNC SEP.
DELAY
EC/PB DET
REC/PB
⑭ QVD
⑧
⑨
COMP SYNC
Q010
TIME CONST. SWITCH
PB
IC002 (2/2)
COMB FILTER
①
1H DELAY
②
㉓
㉑
PB C
PK KILL BURST DEEMPHASIS
NAP
2FSC
FSC BPF
SECAM DET
㉕ PB C
CHROMA N.C
㉕ PB
BURST GATE
BGP
⑲
⑰
EE
EE C
PB C
REC C
DELAY EQ
INV
REC C
⑳
㊷
GND
THROUGH
BYPASS
PB
REC
COMB SW DET
BGP1
KIL DET
KIL
BGP2
ID DET
ID DET
③ SHARP
ID DET
I/B
320FH VCO
PB
REC
PB APC DET
BGP
REC APC DET
BGP
3.58MHz XO(PB)/VXO(REC)
3RD LOCK PROTECT
1/128
HD
HALF H KILLER
SIDE LOCK DET
HD
REC APC DET
HD
REG 4.5V
㊺
BGP
BGP GEN.
HD
1/320
㊲
㉙
REC APC FILTER
㉘
㉗
X002
3.58MHz
㉗



IC401 (2/2)
OSD
18 CV IN
CV OUT 16
H SYNC OUT1 4
20 SYNC IN
SYNC OUT 7
MA252
REC/PB
5Vp-p (V)
IC302 ⑫ PB
2Vp-p (H)
MA252
Q404
BUFFER
Q406
MUTE SWITCH
MA251
IC401 (3/3)
OSD
3 V IN
V OUT 25
EXVSYN 13
EXHSYN 12
7 VCC
Q404
BUFFER
Q413
+B SWITCH
D6V
Q406
BUFFER
Q681
BUFFER
Q407
MUTE SWITCH
CJ621 (2/4)
LINE OUT VIDEO
12
IC402
SYNC SEP WITH AFC&SYNC DET
13
32fH VCO
VCO0 11
VCO1 10
HDO 9
X402 500KHz
COUNT DOWN
AFC
LOCK DET
8 DET
SYNC SEP
V.IN 2
5
MOD V
V SYNC
TU VIDEO
TUNER
(SEE PAGE 3-17, 19)
VIDEO OUT
11
Y/C MIX
PB
REC
CLAMP
QV/QH INS CHARA INS W/D CLIP
VIDEO AMP
Q402
MUTE SWITCH
IC461
VIDEO SELECT
CJ621 (1/4)
LINE-1 IN VIDEO
PJ301 (1/2)
LINE-2 IN VIDEO
760, 761, 790, 960
REC Y/ EE-VIDEO
AGC AMP
7 VIDEO IN
10
7
1
3
5
LOGIC
2
4
L1 CONT
L2 CONT
IC461 ③, ⑦ REC
1.1Vp-p (H)
14 QVD
14
QVD
LP
SP/LP/EP
NOICAN
YNR CONT
RENTAL
COMP SYNC
P CONT
ORC ON
ORC SETTEI
V PB
RF ENV
RF SWP
CLOCK
DATA
FE ON
EXH SYNC
H DET
REC
MEDIA IN
SERVO/SYSTEM CONTROL
(SEE PAGE 3-11)
NAP
2FSC
FSC BPF
SECAM DET
CHROMA N.C
25 PB C OUT 16
23 PB C IN 17
EE C IN 25
EE C OUT 24
20
42
GND
JOG
8
JOG
3 SHARPNESS 30
SHARPNESS
HALF H KILLER
REG 4.5V
45

3-3. SERVO SYSTEM CONTROL BLOCK DIAGRAM



MA-251 BOARD (2/5) (790/960)
(SEE PAGE 4-25)
MA-252 BOARD (2/6) (760/761/L5/L7)
(SEE PAGE 4-30)
DC-68/77 BOARD (1/3)
(790/960)
(SEE PAGE 4-29)
DC-69/78 BOARD (1/3)
(760/761/L5/L7)
(SEE PAGE 4-33)
DRUM MOTOR (1/2)
DRUM PG
DRUM FG
M901
CN002
CN001
D PG
D FG
CN275 (1/2)
IC201 ⑱ REC/PB 5Vp-p (2V)
IC201 ⑲ REC/PB 5Vp-p (360Hz)
IC201 (1/3) SERVO
DRUM D/A
DRUM PG
DRUM FG
IC251 (1/2) DRUM ERROR INTEGRATOR
REF 2.5V
CN275 (2/2) D VS
MTR 12V
DC-68/77 BOARD (2/3) (790/960)
(SEE PAGE 4-29)
DC-69/78 BOARD (2/3) (760/761/L5/L7)
(SEE PAGE 4-33)
D VS
MTR 12V
IC251 (2/2) CAPSTAN ERROR INTEGRATOR
REF 2.5V
CN271 (2/2) C.VS
CAPSTAN MOTOR (1/2)
CAPSTAN FG
M802
CN271 (1/2)
IC101 (1/2) CAPSTAN FG AMP
CAP DA
CAP STOP
STEP PLS
D251
CAP FG
CAP RVS
CAP TRQ1
CAP TRQ2
CAP RVS
LIMITER
MTR 12V
SW 5V
IC201 ⑦ REC 5Vp-p (2V)
IC201 ⑩ REC/PB 4.2Vp-p (2.16kHz)
IC101 (2/2) CTL REC/PB AMP
5V
VCC
INDEX
REC INH
CTL INDEX
CTL REC
REC CTL GEN
TIMING GEN
PB
REC CTL
3 VALUE DET
H: REC CTL
L: REC CTL
OPEN: PB
RC
REC CTL
CN101
CTL (Y)
CTL (X)
CTL HEAD
BIAS 2.4V
PB CTL AMP
GCA
PB CTL AMP
LEVEL DET
PB CTL LOGIC
CTL
PB CTL
RTG MMV
PEAK DET
DC (24V)
AMP GAIN
FOR CHECK
TIME CONST
CTL STEP
RF SWP
RF SWP } VIDEO
(SEE PAGE 3-8)
IC201 ① REC/PB 5Vp-p (V)
IC201 ⑰ PB 5Vp-p (2V)
05

SECTIONN 4
PRINTED WIRNIG BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For printed wiring boards:

- o—— : indicates a lead wire mounted on the component side.
- •—— : indicates a lead wire mounted on the printed side.
- ○ : Through hole.
- ■ : Parts mounted on the conductor side.
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.*
- Circled numbers refer to waveforms.

Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

For schematic diagram:

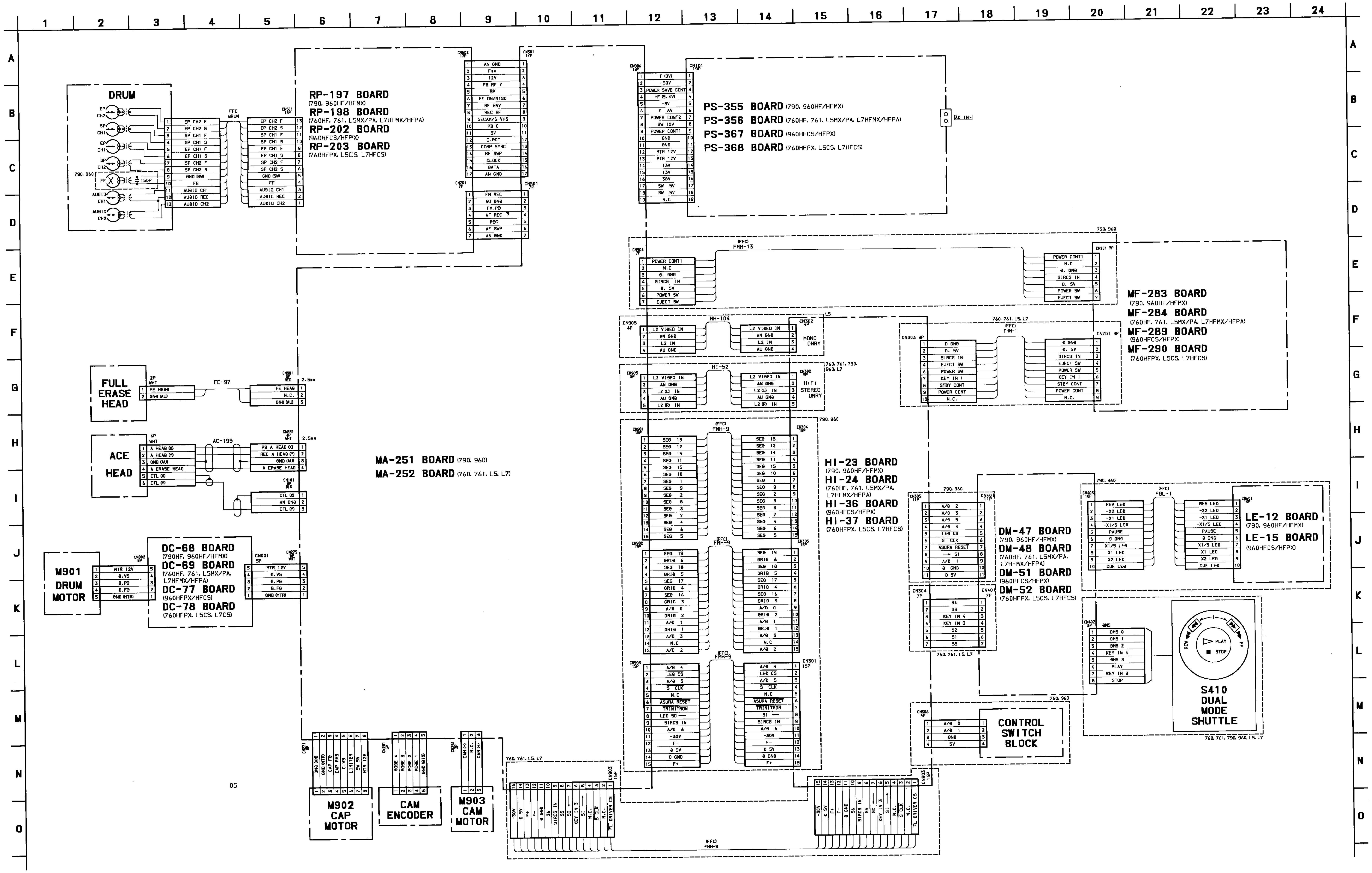
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W (Chip resistors: 1/10W) unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF: μμF 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- -[▭]- : nonflammable resistor.
- -[∿]- : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair.*
- ━━ : B + Line.*
- ━ ━ : B − Line.*
- ⇨ : IN/OUT direction of B line (+ , −).*
- Circled numbers refer to waveforms.*
- Voltages are dc between measurement point.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

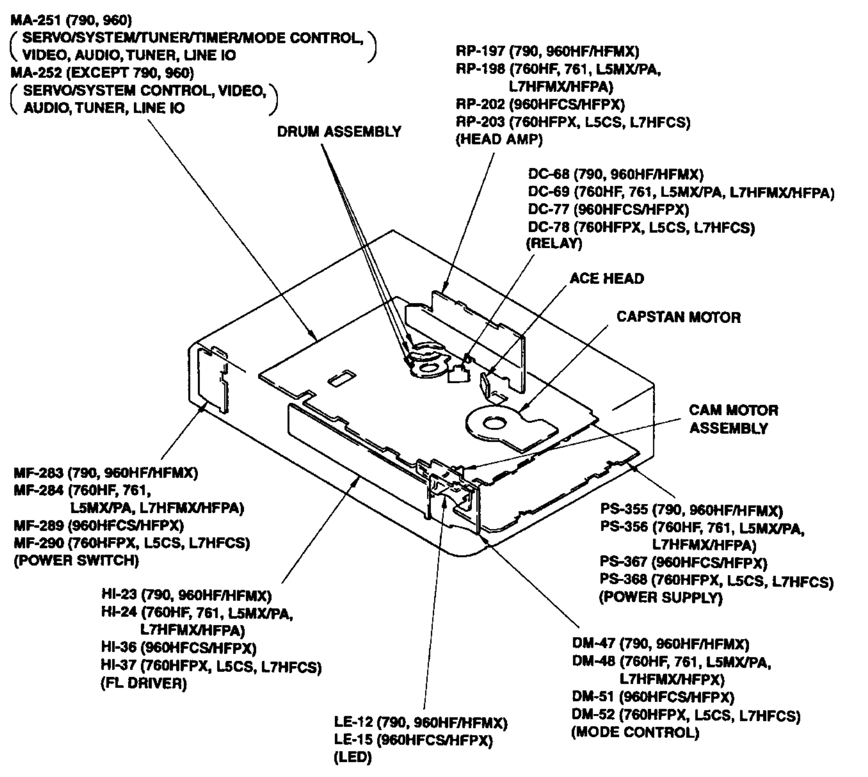
- * : indicated by the color red.

4-1. FRAME SCHEMATIC DIAGRAM


DRUM
EP CH2
SP CH1
EP CH1
SP CH2
FE
150P
790, 960
AUDIO CH1
AUDIO CH2
FFC DRUM
EP CH2 F
EP CH2 S
SP CH1 F
SP CH1 S
EP CH1 F
EP CH1 S
SP CH2 F
SP CH2 S
GND (SW)
AUDIO REC
CN501 13P
RP-197 BOARD (790, 960HF/HFMX)
RP-198 BOARD (760HF, 761, L5MX/PA, L7HFMX/HFPA)
RP-202 BOARD (960HFCS/HFPX)
RP-203 BOARD (760HFPX, L5CS, L7HFCS)
CN503 17P
CN301 17P
AN GND
Fsc
12V
PB RF Y
SP
FE ON/NTSC
RF ENV
REC RF
SECAM/S-VHS
PB C
5V
C.ROT
COMP SYNC
RF SWP
CLOCK
DATA
CN701 7P
CN501 7P
FM REC
AU GND
FM.PB
AF REC P
REC
AF SWP
PS-355 BOARD (790, 960HF/HFMX)
PS-356 BOARD (760HF, 761, L5MX/PA, L7HFMX/HFPA)
PS-367 BOARD (960HFCS/HFPX)
PS-368 BOARD (760HFPX, L5CS, L7HFCS)
CN101 19P
AC IN~
FULL ERASE HEAD
FE-97
FE HEAD
ACE HEAD
AC-199
A HEAD (X)
A HEAD (Y)
A ERASE HEAD
CTL (X)
CTL (Y)
PB A HEAD (X)
REC A HEAD (Y)
CN101 3P BLK
2.5mm
MA-251 BOARD (790, 960)
MA-252 BOARD (760, 761, L5, L7)
M901 DRUM MOTOR
CN002 5P
DC-68 BOARD (790HF, 960HF/HFMX)
DC-69 BOARD (760HF, 761, L5MX/PA, L7HFMX/HFPA)
DC-77 BOARD (960HFPX/HFCS)
DC-78 BOARD (760HFPX, L5CS, L7CS)
CN001 5P
CN275 5P WHT
MTR 12V
D.VS
D.PG
D.FG
GND (MTR)
CN271 8P
GND (AN)
CAP FG
CAP RVS
C.VS
LIMITER
SW 5V
CN281 5P
MODE 4
MODE 3
MODE 2
MODE 1
GND (DIG)
CN291 3P
CAM (−)
N.C.
CAM (+)
M902 CAP MOTOR
CAM ENCODER
M903 CAM MOTOR
05
(FFC) FMM-13
POWER CONT1
D. GND
SIRCS IN
D. 5V
POWER SW
EJECT SW
CN201 7P
MF-283 BOARD (790, 960HF/HFMX)
MF-284 BOARD (760HF, 761, L5MX/PA, L7HFMX/HFPA)
MF-289 BOARD (960HFCS/HFPX)
MF-290 BOARD (760HFPX, L5CS, L7HFCS)
MH-104
CN302 4P
L2 VIDEO IN
L2 IN
MONO ONRY
HI-52
CN302 5P
L2 (L) IN
L2 (R) IN
HiFi STEREO ONRY
760, 761, 790, 960, L7
CN303 9P
(FFC) FHM-1
CN701 9P
KEY IN 1
STBY CONT
POWER CONT
(FFC) FMH-9
CN304 15P
CN303 15P
CN301 15P
SEG
GRID
A/D
LED CS
S CLK
ASURA RESET
TRINITRON
S1
F+
F−
−30V
HI-23 BOARD (790, 960HF/HFMX)
HI-24 BOARD (760HF, 761, L5MX/PA, L7HFMX/HFPA)
HI-36 BOARD (960HFCS/HFPX)
HI-37 BOARD (760HFPX, L5CS, L7HFCS)
CN305 11P
CN401 11P
CN304 7P
CN401 7P
DM-47 BOARD (790, 960HF/HFMX)
DM-48 BOARD (760HF, 761, L5MX/PA, L7HFMX/HFPA)
DM-51 BOARD (960HFCS/HFPX)
DM-52 BOARD (760HFPX, L5CS, L7HFCS)
760, 761, L5, L7
CN306 4P
CONTROL SWITCH BLOCK
CN403 10P
(FFC) FDL-1
CN601 10P
REV LED
−X2 LED
−X1 LED
−X1/5 LED
PAUSE
X1/5 LED
X1 LED
X2 LED
CUE LED
LE-12 BOARD (790, 960HF/HFMX)
LE-15 BOARD (960HFCS/HFPX)
CN402 8P
DMS 0
DMS 1
DMS 2
KEY IN 4
DMS 3
PLAY
KEY IN 3
STOP
REV
FF
S410 DUAL MODE SHUTTLE
760, 761, 790, 960, L5, L7
CN903 15P
PL DRIVER CS

RP-197/198/202/203 BOARD

CN501	B-4
CN502	C-2
CN503	A-4
CN701	A-7
IC501	C-3
IC760	B-5
Q501	B-2
Q502	B-3
Q571	C-4
Q572	C-4
Q573	C-5
Q574	C-6
Q575	C-5
Q901	B-6
Q904	B-6
Q905	B-7

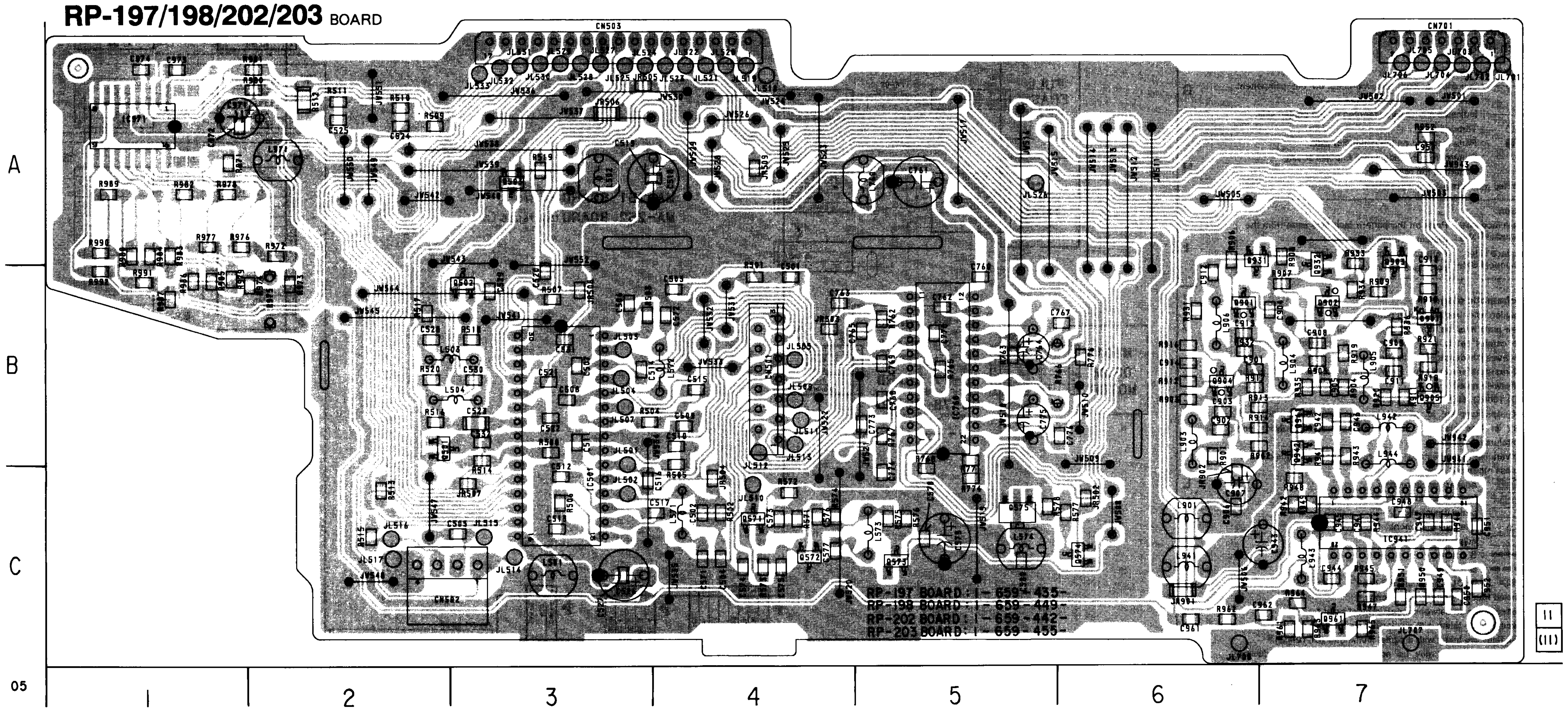

MA-251 (790, 960)
(SERVO/SYSTEM/TUNER/TIMER/MODE CONTROL, VIDEO, AUDIO, TUNER, LINE IO)
MA-252 (EXCEPT 790, 960)
(SERVO/SYSTEM CONTROL, VIDEO, AUDIO, TUNER, LINE IO)
DRUM ASSEMBLY
RP-197 (790, 960HF/HFMX)
RP-198 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
RP-202 (960HFCS/HFPX)
RP-203 (760HFPX, L5CS, L7HFCS)
(HEAD AMP)
DC-68 (790, 960HF/HFMX)
DC-69 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
DC-77 (960HFCS/HFPX)
DC-78 (760HFPX, L5CS, L7HFCS)
(RELAY)
ACE HEAD
CAPSTAN MOTOR
CAM MOTOR ASSEMBLY
MF-283 (790, 960HF/HFMX)
MF-284 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
MF-289 (960HFCS/HFPX)
MF-290 (760HFPX, L5CS, L7HFCS)
(POWER SWITCH)
HI-23 (790, 960HF/HFMX)
HI-24 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
HI-36 (960HFCS/HFPX)
HI-37 (760HFPX, L5CS, L7HFCS)
(FL DRIVER)
LE-12 (790, 960HF/HFMX)
LE-15 (960HFCS/HFPX)
(LED)
PS-355 (790, 960HF/HFMX)
PS-356 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
PS-367 (960HFCS/HFPX)
PS-368 (760HFPX, L5CS, L7HFCS)
(POWER SUPPLY)
DM-47 (790, 960HF/HFMX)
DM-48 (760HF, 761, L5MX/PA, L7HFMX/HFPX)
DM-51 (960HFCS/HFPX)
DM-52 (760HFPX, L5CS, L7HFCS)
(MODE CONTROL)

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

There are cases that the part isn't mounted in this model is printed on this diagram.

PR-197/198/202/203 (HEAD AMP) PRINTED WIRING BOARD

– Ref. No.: RP-197/202 Board; 1,000 series, RP-198/203 Board; 2,000 series –


RP-197/198/202/203 BOARD
CN503
CN701
CN502
A
B
C
05
1
2
3
4
5
6
7
I
(II)
RP-197 BOARD : 1-659-435-
RP-198 BOARD : 1-659-449-
RP-202 BOARD : 1-659-442-
RP-203 BOARD : 1-659-455-

- Signal path

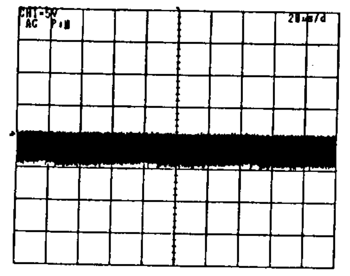
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡
PB	⇨	⇨»	⇨»»	⇨

- Signal path

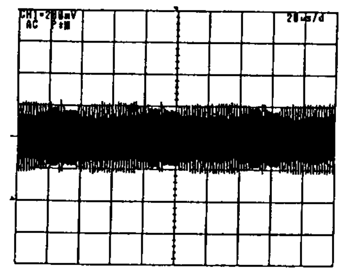
	REC	REC/PB	PB
Ref. signal	➤	➤	▷

- **Waveforms**

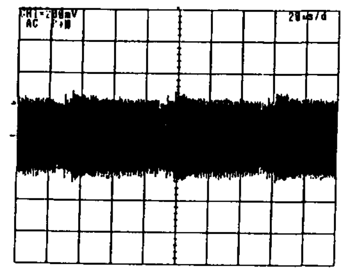
❶ IC501 ④ REC 5Vp-p (H)



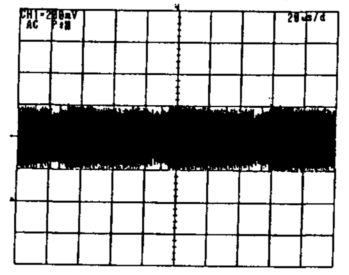
❷ IC501 ㉘ REC 360mV (H)



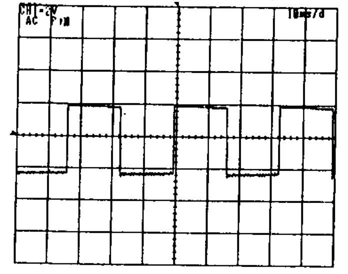
❸ IC501 ㉗ PB 480mVp-p (H)



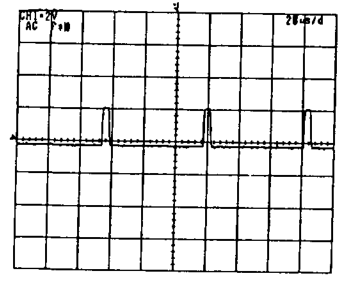
❹ IC501 ㉔ PB 400mVp-p (H)



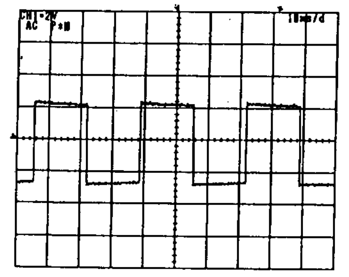
❺ IC501 ㉑ REC/PB 4.4Vp-p (2V)



❻ IC501 ⑱ REC/PB 2.4Vp-p (H)

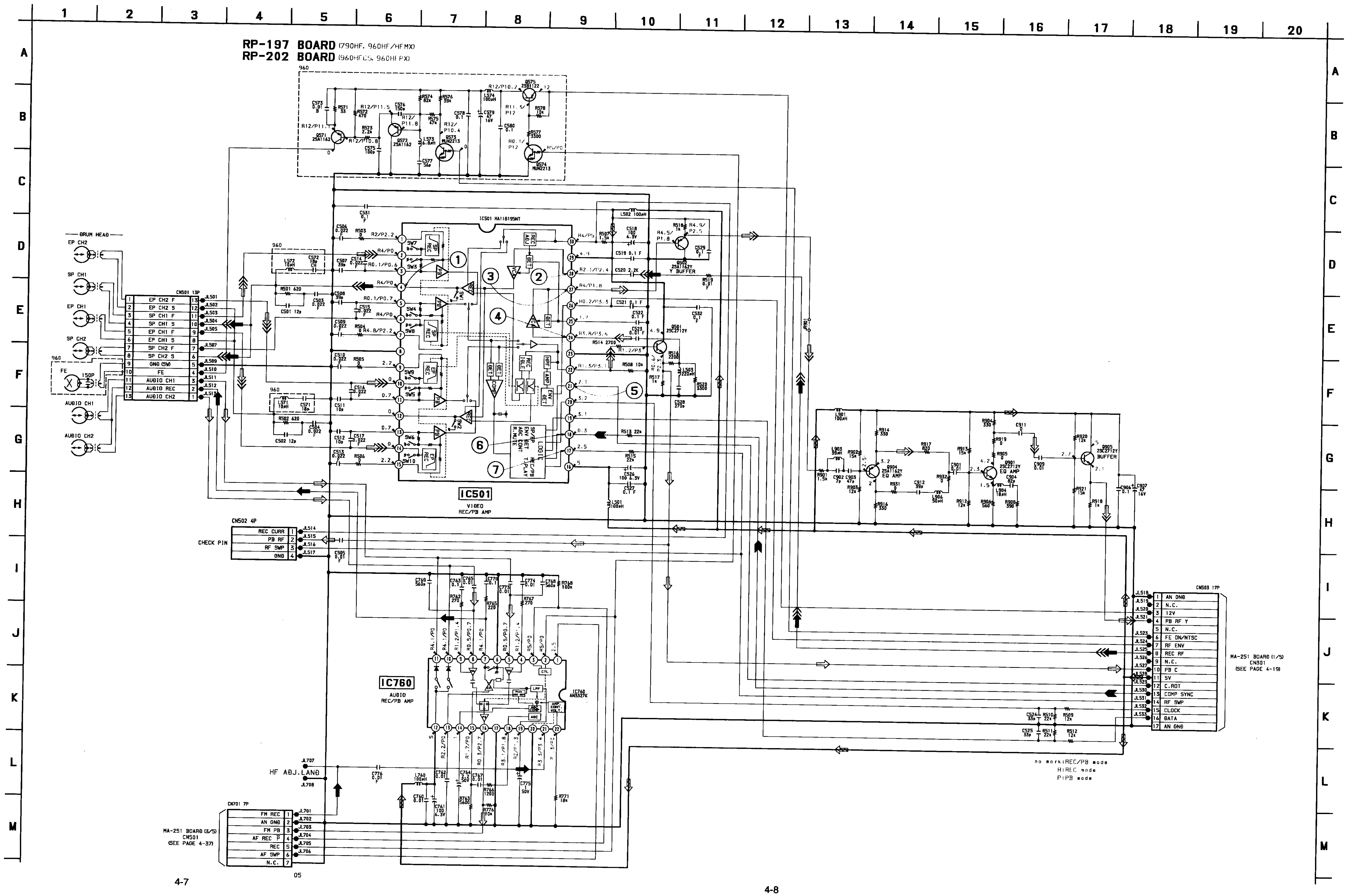


❼ IC501 ⑰ REC/PB 5Vp-p (2V)



PR-197/202 (HEAD AMP) (SLV-790/960) SCHEMATIC DIAGRAM

– Ref. No.: RP-197/202 Board; 1,000 series –


RP-197 BOARD (790HF, 960HF/HFMX)
RP-202 BOARD (960HFCS, 960HFPX)
960
Q571 2SA1162
Q572 2SA1162
Q573 MUN2213
Q575 2SB1122
Q574 MUN2213
DRUM HEAD
EP CH2
SP CH1
EP CH1
SP CH2
FE
150P
AUDIO CH1
AUDIO CH2
CN501 13P
1 EP CH2 F
2 EP CH2 S
3 SP CH1 F
4 SP CH1 S
5 EP CH1 F
6 EP CH1 S
7 SP CH2 F
8 SP CH2 S
9 GND (SW)
10 FE
11 AUDIO CH1
12 AUDIO REC
13 AUDIO CH2
IC501 HA118195NT
IC501
VIDEO
REC/PB AMP
Q502 2SA1162Y
Y BUFFER
Q501 2SC2712Y
CN502 4P
CHECK PIN
REC CURR 1
PB RF 2
RF SWP 3
GND 4
Q904 2SA1162Y
EQ AMP
Q901 2SC2712Y
EQ AMP
Q905 2SC2712Y
BUFFER
IC760
AUDIO
REC/PB AMP
IC760 AN3327K
HF ADJ.LAND
JL707
JL708
CN701 7P
FM REC 1
AN GND 2
FM PB 3
AF REC P̄ 4
REC 5
AF SWP 6
N.C. 7
MA-251 BOARD (3/5)
CN501
(SEE PAGE 4-37)
CN503 17P
1 AN GND
2 N.C.
3 12V
4 PB RF Y
5 N.C.
6 FE ON/NTSC
7 RF ENV
8 REC RF
9 N.C.
10 PB C
11 5V
12 C.ROT
13 COMP SYNC
14 RF SWP
15 CLOCK
16 DATA
17 AN GND
MA-251 BOARD (1/5)
CN301
(SEE PAGE 4-19)
no mark:REC/PB mode
R:REC mode
P:PB mode
05

SECTION 5
REPAIR PARTS LIST

5-1. EXPLODED VIEWS

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Color Indication of Appearance Parts Example:

  KNOB, BALANCE (WHITE) . . . (RED)

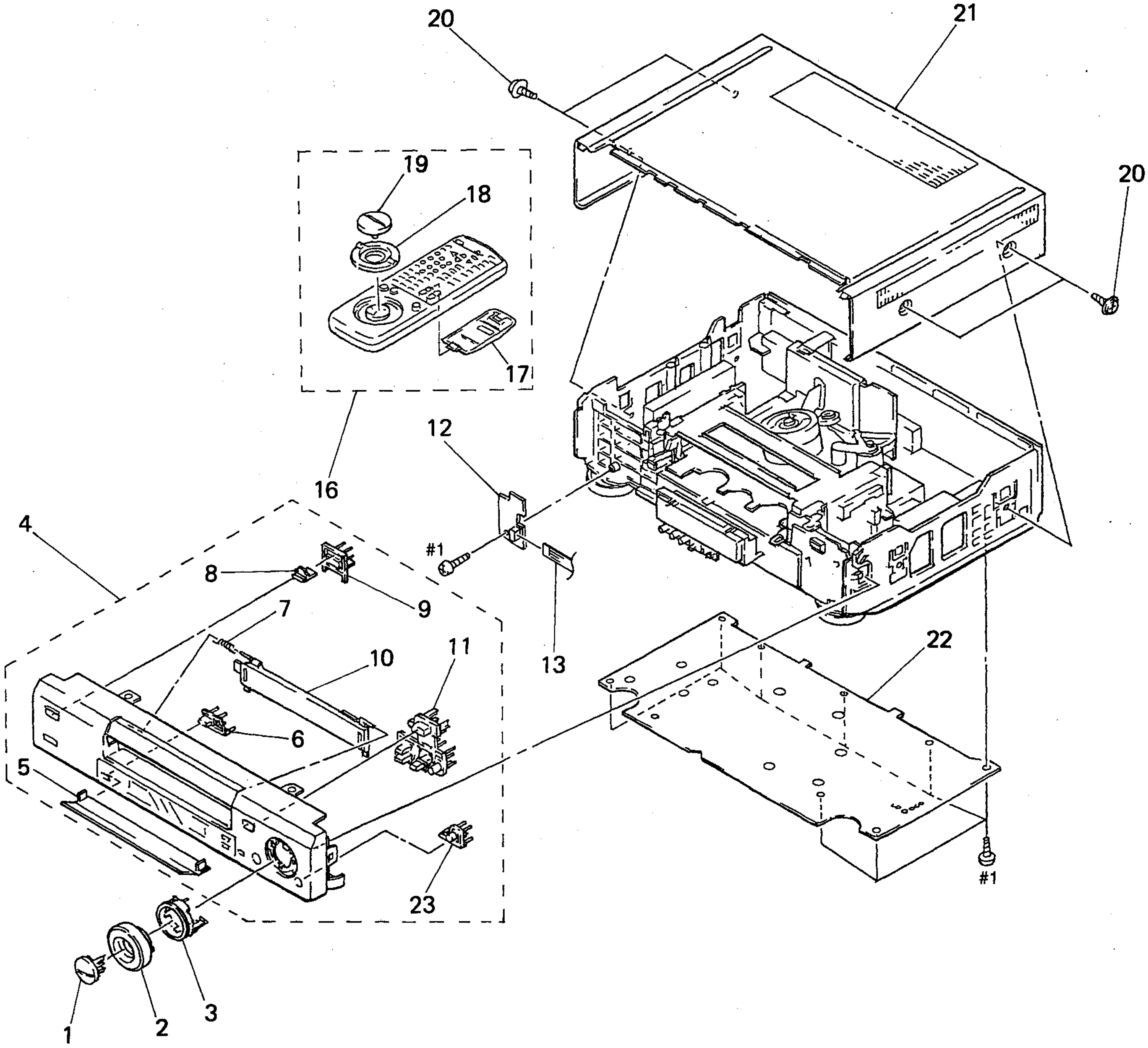
  ↑ Parts Color ↑ Cabinet's Color

- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le neméro spécifié.

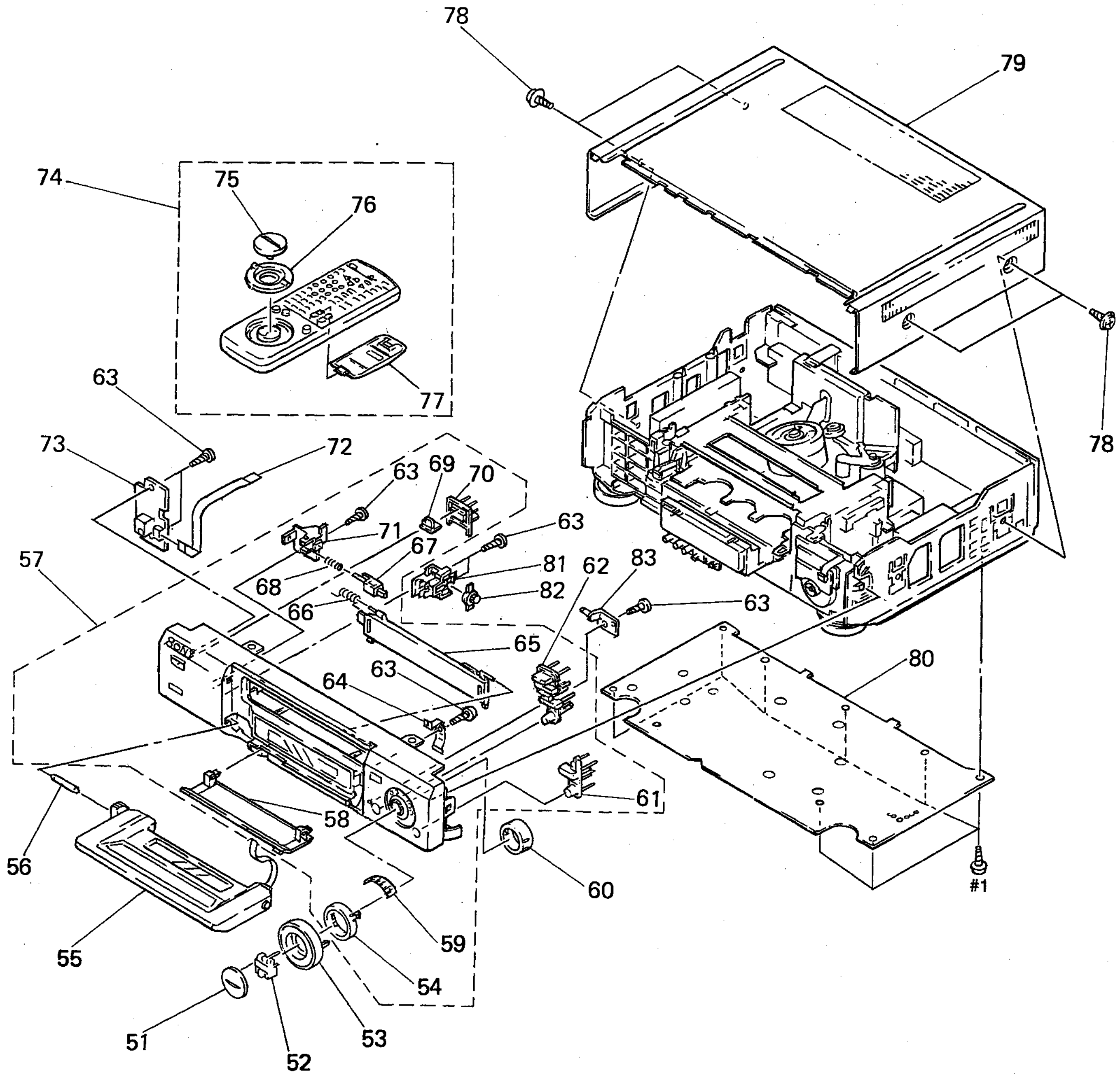
5-1-1. FRONT PANEL AND CABINET ASSEMBLIES (760, 761, L5, L7)



Ref. No.	Part No.	Description	Remark
1	X-3945-621-1	BUTTON ASSY, FUNCTION (TITANIUM) (761)	
1	X-3945-890-1	BUTTON ASSY, FUNCTION (760, L5, L7)	
2	3-966-886-01	RING, SHUTTLE (TITANIUM) (761)	
2	3-966-886-31	RING, SHUTTLE (EXCEPT 761)	
3	3-966-890-01	RING, MODE (760, 761)	
3	3-966-890-41	RING, MODE (L5, L7)	
4	X-3945-518-1	PANEL ASSY, FRONT (760)	
4	X-3945-689-1	PANEL ASSY, FRONT (TITANIUM) (761)	
4	X-3945-699-1	PANEL ASSY, FRONT (L5)	
4	X-3945-715-1	PANEL ASSY, FRONT (L7)	
5	3-966-214-01	DOOR (A), JACK (EXCEPT 761)	
5	3-966-214-11	DOOR (A), JACK (TITANIUM) (761)	
6	3-966-216-01	BUTTON, TV (EXCEPT 761)	
6	3-966-216-11	BUTTON, TV (TITANIUM) (761)	
7	3-953-432-01	SPRING (GE), FL	
8	3-946-611-01	TIP, POWER BUTTON	
9	3-966-213-01	BUTTON, POWER (EXCEPT 761)	
9	3-966-213-11	BUTTON, POWER (TITANIUM) (761)	
10	3-966-858-01	DOOR, CASSETTE (L5)	
10	3-966-858-11	DOOR, CASSETTE (760, L7)	
10	3-966-858-31	DOOR, CASSETTE (TITANIUM) (761)	

Ref. No.	Part No.	Description	Remark
11	3-966-217-01	BUTTON (A), EP (760)	
11	3-966-217-11	BUTTON (A), EP (L5, L7)	
11	3-966-217-21	BUTTON (A), EP (TITANIUM) (761)	
* 12	A-6782-794-A	MF-284 BOARD, COMPLETE (760HF, 761, L5MX/PA, L7HFMX/HFPA)	
* 12	A-6782-795-A	MF-290 BOARD, COMPLETE (760HFPX, L5CS, L7HFCS)	
13	1-776-226-11	CABLE, FLAT (FHM-1) 9P	
16	1-473-487-11	REMOTE COMMANDER (RMT-V186) (L7)	
16	1-473-487-21	REMOTE COMMANDER (RMT-V186) (L5)	
16	1-473-515-11	REMOTE COMMANDER (RMT-V184A) (760, 761)	
17	3-708-817-01	COVER, BATTERY (V184A, V186)	
18	3-957-513-11	RING, SHUTTLE (V184A, V186)	
19	X-3944-446-2	BUTTON ASSY (C) (V184A, V186)	
20	3-710-901-11	SCREW, TAPPING	
* 21	3-966-225-21	CASE, UPPER (760)	
* 21	3-966-225-31	CASE, UPPER (L5, L7)	
* 21	3-966-225-61	CASE, UPPER (TITANIUM) (761)	
* 22	3-966-226-02	PLATE, BOTTOM	
23	3-966-219-01	BUTTON (A), REC (EXCEPT 761)	
23	3-966-219-11	BUTTON (A), REC (TITANIUM) (761)	

5-1-2. FRONT PANEL AND CABINET ASSEMBLIES (790, 960)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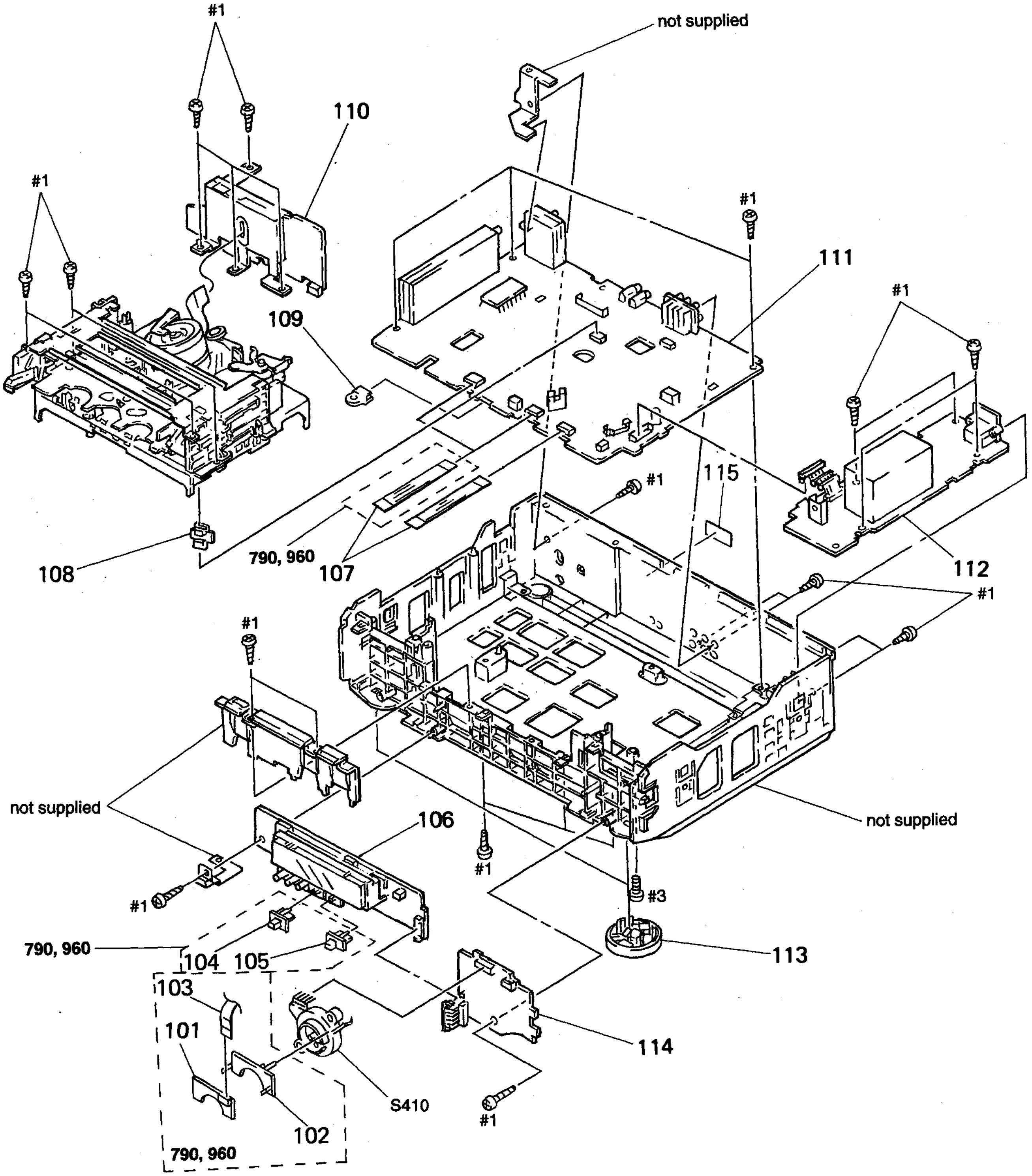
Ref. No.	Part No.	Description	Remark
51	3-966-252-01	BUTTON, PB/STOP	
52	3-966-251-01	BASE, BUTTON	
53	3-966-253-01	RING, SHUTTLE	
54	3-966-807-01	PLATE, INDICATION, SHUTTLE	
55	1-473-518-11	SWITCH BLOCK, CONTROL (790)	
55	1-473-518-21	SWITCH BLOCK, CONTROL (960)	
* 56	3-960-077-01	SHAFT (LEFT), FULCRUM	
57	X-3945-519-1	PANEL ASSY, FRONT (790)	
57	X-3945-717-1	PANEL ASSY, FRONT (960)	
58	3-966-244-01	DOOR (B), JACK (790)	
58	3-966-244-11	DOOR (B), JACK (960)	
59	3-966-241-01	PLATE, LIGHT GUIDE, SHUTTLE	
60	3-966-250-01	BASE, SHUTTLE RING	
61	3-966-242-01	BUTTON (B), REC	
62	3-966-245-01	BUTTON (B), EP	
63	4-921-277-41	SCREW (B2.6X8), TAPPING, BIND	
* 64	3-960-556-01	SPRING, DOOR LOCK	
65	3-960-094-01	DOOR, CASSETTE	
66	3-953-432-01	SPRING (GE), FL	

Ref. No.	Part No.	Description	Remark
67	3-944-564-01	CLAW, LOCK	
68	3-957-388-01	SPRING, COMPRESSION	
69	3-946-611-01	TIP, POWER BUTTON	
70	3-966-213-01	BUTTON, POWER	
* 71	3-957-548-01	HOLDER, LOCK CLAW	
72	1-776-227-11	CABLE, FLAT (FMM-13) 7P	
* 73	A-6782-798-A	MF-283 BOARD, COMPLETE (790, 960HF/HFMX)	
* 73	A-6782-806-A	MF-289 BOARD, COMPLETE (960HFCS/HFPX)	
74	1-473-483-11	REMOTE COMMANDER (RMT-V158C) (960)	
74	1-473-483-21	REMOTE COMMANDER (RMT-V161A) (790)	
75	X-3944-446-2	BUTTON ASSY (C) (V158C, V161A)	
76	3-957-513-11	RING, SHUTTLE (V158C, V161A)	
77	3-708-817-01	COVER, BATTERY (V158C, V161A)	
78	3-710-901-11	SCREW, TAPPING	
79	3-966-255-21	CASE, UPPER	
* 80	3-966-226-02	PLATE, BOTTOM	
* 81	3-960-076-01	PLATE (LEFT), FULCRUM, DOOR	
82	3-961-745-01	DAMPER, OIL	
83	X-3944-447-1	PLATE (RIGHT) ASSY, FULCRUM, DOOR	

5-1-3. CHASSIS ASSEMBLY



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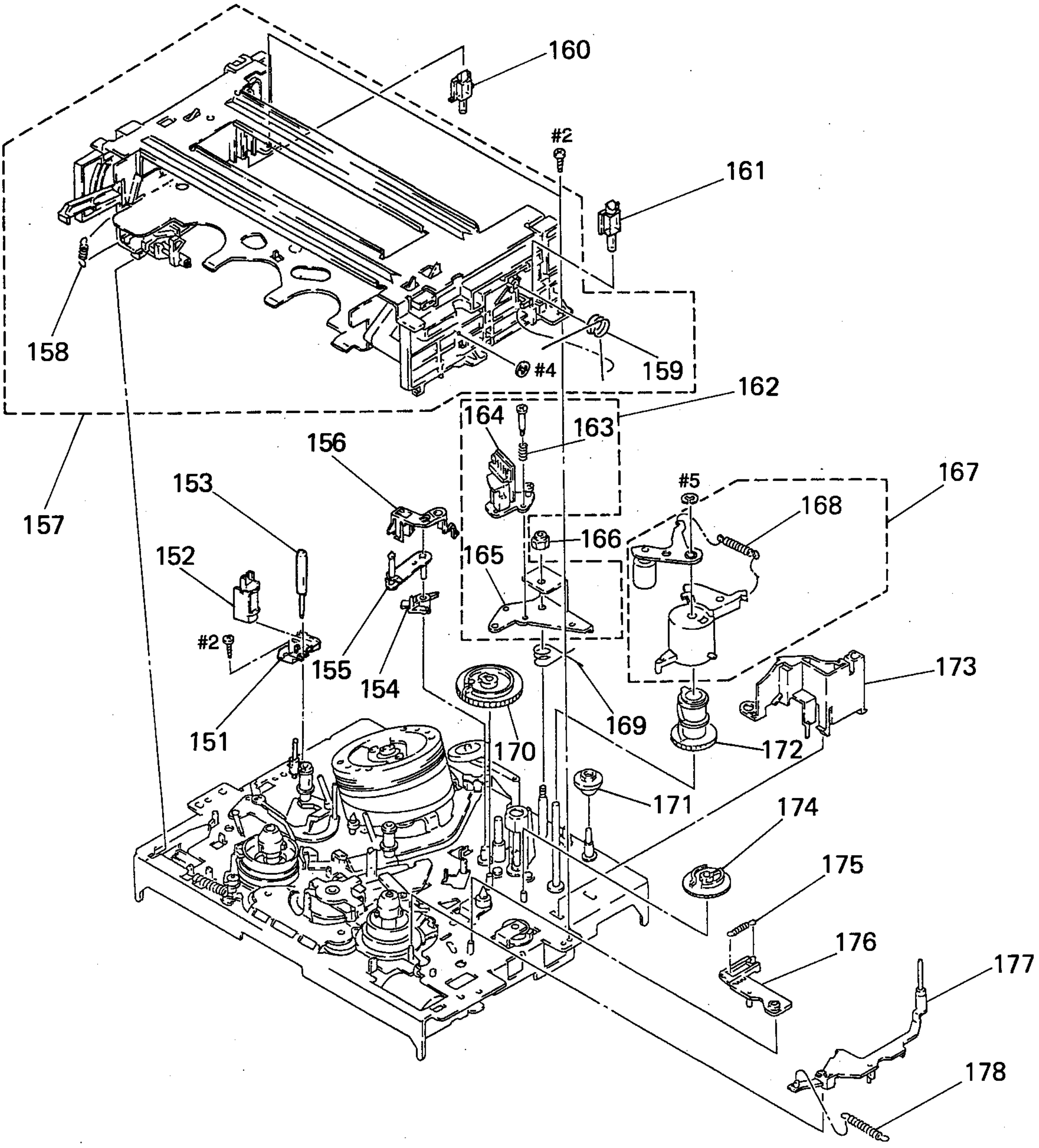
790, 960

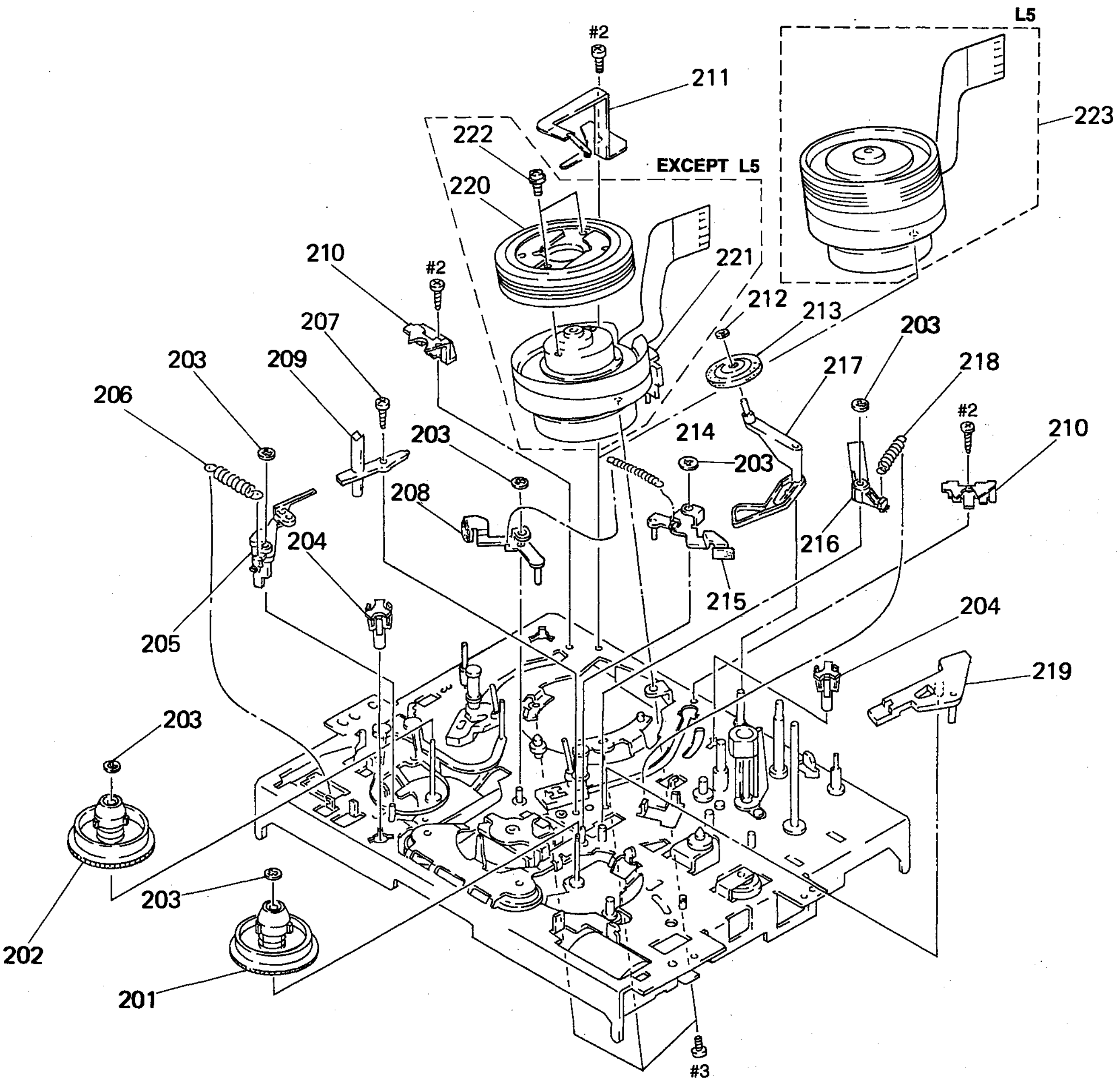
Ref. No.	Part No.	Description	Remark
* 101	A-6794-139-A	LE-12 BOARD, COMPLETE (790, 960HF/HFMX)	
* 101	A-6794-141-A	LE-15 BOARD, COMPLETE (960HFCS/HFPX)	
* 102	3-966-254-01	HOLDER, LE PC BOARD (790, 960)	
103	1-776-228-11	CABLE, FLAT (FDL-1) 10P (790, 960)	
104	3-966-255-01	KNOB (3P), SLIDE (790, 960)	
105	3-966-256-01	KNOB (4P), SLIDE (790, 960)	
* 106	A-6782-790-A	HI-24 BOARD, COMPLETE (760HF, 761)	
* 106	A-6782-797-A	HI-37 BOARD, COMPLETE (L7HFCS)	
* 106	A-6782-801-A	HI-24 BOARD, COMPLETE (L5MX/PA)	
* 106	A-6782-805-A	HI-37 BOARD, COMPLETE (760HFPX)	
* 106	A-6782-807-A	HI-36 BOARD, COMPLETE (960HFCS/HFPX)	
* 106	A-6782-810-A	HI-23 BOARD, COMPLETE (960HF/HFMX)	
* 106	A-6782-813-A	HI-23 BOARD, COMPLETE (790)	
* 106	A-6782-816-A	HI-24 BOARD, COMPLETE (L7HFMX/HFPA)	
* 106	A-6782-822-A	HI-37 BOARD, COMPLETE (L5CS)	
107	1-776-225-11	CABLE, FLAT (FMH-9) 15P	
* 108	A-6794-137-A	DC-68 BOARD, COMPLETE (790, 960HF/HFMX)	
* 108	A-6794-137-A	DC-69 BOARD, COMPLETE	(760HF, 761, L5MX/PA, L7HFMX/HFPA)
* 108	A-6794-137-A	DC-77 BOARD, COMPLETE (960HFCS/HFPX))	
* 108	A-6794-137-A	DC-78 BOARD, COMPLETE	(760HFPX, L5CS, L7HFCS)
* 109	3-966-237-01	HOLDER (ST), MA	
* 110	A-6782-791-A	RP-198 BOARD, COMPLETE	(760HF, 761, L7HFMX/HFPA)
* 110	A-6782-796-A	RP-203 BOARD, COMPLETE (760HFPX, L7HFCS)	
* 110	A-6782-799-A	RP-197 BOARD, COMPLETE (790)	
* 110	A-6782-808-A	RP-202 BOARD, COMPLETE (960HFCS/HFPX)	
* 110	A-6782-811-A	RP-197 BOARD, COMPLETE (960HF/HFMX)	
* 110	A-6782-821-A	RP-203 BOARD, COMPLETE (L5CS)	
* 110	A-6782-832-A	RP-198 BOARD, COMPLETE (L5MX/PA)	
* 111	A-6782-792-A	MA-252 BOARD, COMPLETE (760, 761)	
* 111	A-6782-800-A	MA-251 BOARD, COMPLETE (790)	
* 111	A-6782-802-A	MA-252 BOARD, COMPLETE (L5)	
* 111	A-6782-815-A	MA-251 BOARD, COMPLETE (960)	
* 111	A-6782-817-A	MA-252 BOARD, COMPLETE (L7)	
* 112	A-6782-789-A	PS-356 BOARD, COMPLETE	(760HF, 761, L7HFMX/HFPA)
* 112	A-6782-804-A	PS-367 BOARD, COMPLETE (960HFCS/HFPX)	
* 112	A-6782-812-A	PS-355 BOARD, COMPLETE	(790, 960HF/HFMX)
* 112	A-6782-819-A	PS-368 BOARD, COMPLETE (760HFPX, L7HFCS)	
* 112	A-6782-820-A	PS-368 BOARD, COMPLETE (L5CS)	
* 112	A-6782-830-A	PS-356 BOARD, COMPLETE (L5MX/PA)	
113	3-966-229-01	INSULATOR (ST) (EXCEPT 761)	
113	3-966-229-31	INSULATOR (ST) (TITANIUM) (761)	
* 114	A-6782-788-A	DM-48 BOARD, COMPLETE	(760HF, 761, L5MX/PA, L7HFMX/HFPA)
* 114	A-6782-803-A	DM-51 BOARD, COMPLETE (960HFCS/HFPX)	
* 114	A-6782-809-A	DM-47 BOARD, COMPLETE (790HF, 960HF/HFMX)	
* 114	A-6782-818-A	DM-52 BOARD, COMPLETE	(760HFPX, L5CS, L7HFCS)
* 115	3-704-386-11	LABEL, TELESONIC (790, 960)	
S410	1-572-662-11	SWITCH, ROTARY (DUAL MODE SHUTTLE)	

5-1-4. MECHANISM CHASSIS ASSEMBLY (1)



Ref. No.	Part No.	Description	Remark
151	X-3945-348-1	FEH ASSY	
152	1-500-144-11	HEAD, FE	
153	X-3944-460-1	ROLLER ASSY, TG2	
154	3-958-421-01	HOLDER, TG8	
155	X-3944-797-1	TG8 ASSY	
156	3-962-298-01	BRACKET, TG7 TAPE	
157	A-6751-496-C	FL BLOCK ASSY	
158	3-958-467-01	SPRING, TENSION COIL	
159	3-958-195-01	SPRING, TORSION	
160	3-960-215-01	PLATE, LIGHT GUIDE, END SENSOR	
161	3-960-216-01	PLATE, LIGHT GUIDE, TOP SENSOR	
162	A-6736-103-A	ACE BLOCK ASSY	
163	3-960-439-02	SPRING (ACE), COMPRESSION	
164	1-506-485-11	PIN, CONNECTOR 6P	
165	3-958-491-01	BASE, ACE	
166	3-942-867-01	NUT, AC HEIGHT ADJUSTMENT	
167	A-6746-072-A	PRESS BLOCK ASSY, PINCH	
168	3-958-455-01	SPRING (PINCH), TENSION	
169	3-958-487-01	SPRING, (AEC) TORSION COIL	
170	3-958-152-01	GEAR, TG8	
171	3-958-501-01	SCREW, ACE ADJUSTMENT	
172	3-958-151-01	GEAR, ELEVATOR	
173	3-958-454-01	OPNER, LID	
174	3-958-153-01	GEAR, PRESS	
175	3-958-462-01	SPRING (RVS BRAKE), TENSION	
176	X-3943-885-1	ARM ASSY, RVS BRAKE	
177	X-3943-882-1	BRAKE (T) ASSY, SOFT	
178	3-958-505-01	SPRING (SOFT BRAKE T), TENSION	

5-1-5. MECHANISM CHASSIS ASSEMBLY (2)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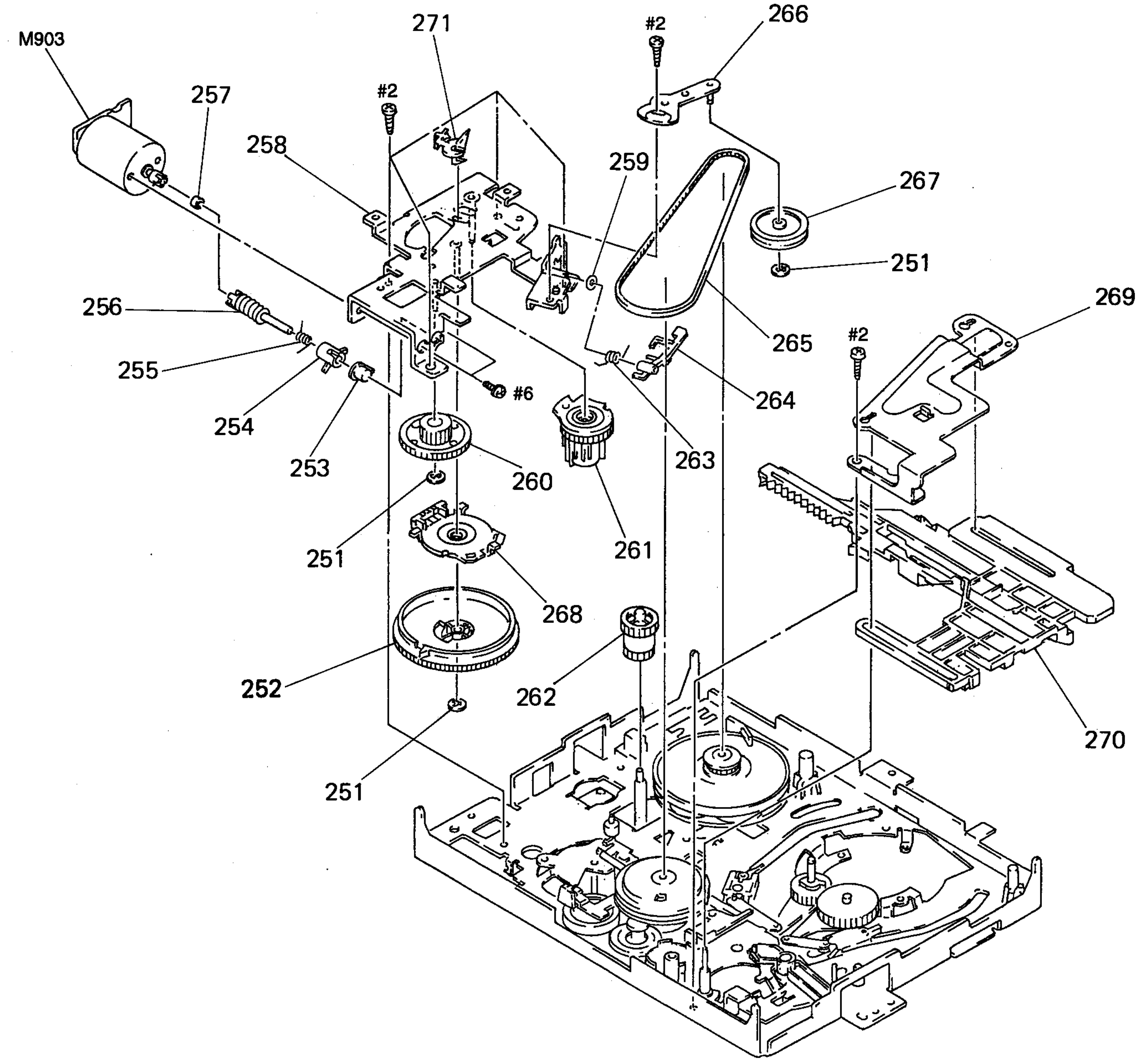
Ref. No.	Part No.	Description	Remark
201	X-3943-903-1	TABLE, REEL (T) ASSY	
202	X-3943-902-1	TABLE, REEL (S) ASSY	
203	3-669-595-00	WASHER (2), STOPPER	
204	3-958-390-01	SHAFT, PC BOARD	
205	3-958-450-01	BRAKE (S), SOFT	
206	3-958-443-01	SPRING, STRETCH COIL SPRING	
207	3-961-441-01	SCREW (3X8)	
208	X-3945-650-1	BRAKE (S) ASSY, MAIN	
209	3-958-391-01	PLATE, LIGHT GUIDE, LED	
210	3-958-389-01	CATCHER	
211	X-3943-899-5	GROUND ASSY, SHAFT	
212	3-321-393-01	WASHER, STOPPER	
213	X-3944-363-1	ROLLER ASSY, HC	
214	3-958-517-01	SPRING, TENSIONCOIL	
215	X-3945-651-1	ARM (T) ASSY, MAIN BRAKE	
216	3-960-139-01	ARM, NEUTRALITY	
217	X-3943-896-1	ARM ASSY, HC	
218	3-958-535-01	SPRING, TENSION	
219	3-960-138-01	ARM, PENDULUM COMPULSION	
220	8-848-576-02	DRUM ASSY, ROTARY UPPER (DZR-45-R) (760, 761, 790, L7)	
220	8-848-594-02	DRUM ASSY, ROTARY UPPER (DZR-51-R) (960)	
221	8-848-658-11	DRUM ASSY, LOWER (DZL-45B/J-RP) (760, 761, 790, L7)	
221	8-848-666-11	DRUM ASSY, LOWER (DZH-51B/J-RP) (960)	
222	2-643-205-01	SCREW, +PW 3X8	
223	8-848-681-11	DRUM ASSY (DZH-73B/Q-RP) (L5)	

5-1-6. MECHANISM CHASSIS ASSEMBLY (3)



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Ref. No.	Part No.	Description	Remark
251	3-669-595-00	WASHER (2), STOPPER	
252	3-958-161-04	GEAR, CAM	
253	3-958-155-01	BEARING, CAM MOTOR	
254	3-958-160-01	PROPELLOR	
255	3-958-460-01	SPRING, ONE-WAY	
256	3-958-159-01	WORM	
257	3-959-840-11	RUBBER, JOINT	
* 258	X-3943-884-1	CHASSIS ASSY, CAM MOTOR	
259	3-701-439-21	WASHER	
260	3-958-157-01	WHEEL, WORM	
261	3-958-156-02	GEAR, FL DRIVING	
262	3-958-162-01	GEAR, UPPER/LOWER COMMUNICATION	
263	3-958-445-01	SPRING, TORSIONCOIL (CAP BRAKE)	
264	X-3943-888-1	BRAKE ASSY, CAP	
265	3-958-361-01	BELT, TIMING	
266	X-3943-889-1	ARM ASSY, TENSION VEHICLE	
267	3-958-448-01	WHEEL, TENSION	
268	1-762-076-11	SWITCH, ROTARY	
* 269	3-959-763-01	RETAINER	
270	3-958-163-04	SLIDER, MAIN	
271	3-965-977-01	RETAINER, CAM GEAR	
M903	X-3943-883-1	MOTOR ASSY, CAM	

SECTION 6
INTERFACE, ICPIN FUNCTION DESCRIPTION

6-1. SYSTEM CONTROL – VIDEO BLOCK INTERFACE (MA-251 BOARD IC201)

Signal	Pin No.	I/O	STOP FF/ REW	TAPE THREAD-ING	TAPE UNTHREAD-ING	PB	PB • PAUSE	SLOW	×2	CUE	REVIEW	REC	REC • PAUSE
$\overline{\text{V PB}}$	MA-251 IC201(98)	O	H	H	H	L	L	L	L	L	L	H	H
RF SWP (SW30)	MA-251 IC201①	O	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
QVD	MA-251 IC201②	O	L	L	L	*3	*4	*4	*4	*4	*4	L	L
$\overline{\text{SP}}$	MA-251 IC201(93)	O	*6	*6	*6	*7	*7	*7	*7	*7	*7	*6	*6
$\overline{\text{SP}}$/EP/EP: HI - IMP	MA-251 IC201⑫	O	*12	*12	*12	*7	*7	*7	*7	*7	*7	*12	*12
V SYNC	MA-251 IC201(66)	I	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8
CTL REC	MA-251 IC201(75)	O	L	L	L	L	L	L	L	L	L	H	L
LINE 1	MA-251 IC201⑥	O	L	L	L	L	L	L	L	L	L	L	L
JOG	MA-251 IC201(97)	O	L	L	L	L	H	H	H	H	H	L	L
ORC SETTEI	MA-251 IC201(91)	O	L	L	L	L	L	L	L	L	L	*13	*13

*1. Foward slow mode: "HI-Z (2.5 V)" in tape stop, "L" in tape running (approx. 40 msec.).
Foward slow mode: "HI-Z (2.5 V)" in tape stop, "H" in tape running SP mode (approx. 40 msec.).
"L" in tape running EP mode (approx. 40 msec.).
*2. Synchronized with drum rotation. 30 Hz 50% duty pulse.
*3. Normally "L". "H" when CTL signal is not generated.
*4. V period "H" pulse.
*5. "H" in SP mode. "L" in LP/EP mode.
*6. Selected by REC mode. SP mode: "L"
*7. Selected by tape recording mode.

Mode / Signal	SP	LP	EP
SP (91)	L	H	H
$\overline{\text{LP}}$ (93)	L	H	L

*8. Composite Sync signal (positive).
*9. "H" when menu screen or blue back screen.
*10. "HI-Z (2.5 V)" in LP/EP mode. "H" in SP mode.
*11. Selected by REC mode: "H" EP mode.
*12. Selected by REC mode: "H" LP mode.
*13. "H" during APC measurement.

6-2. SYSTEM CONTROL – SERVO PERIPHERAL CIRCUIT INTERFACE (MA-251 BOARD IC201)

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREAD -ING	TAPE UNTHREAD -ING	PB	PB • PAUSE	SLOW	CUE	×2	REVIEW	REC	REC • PAUSE	PB INDEX WRT/ERS
REC CTL	MA-251 IC201⑦	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	
$\overline{\text{CAP STOP}}$	MA-251 IC201㉟	O (O.D)	L	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	L	*3	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	
STEP PLS	MA-251 IC201(99)	O	L	L	L	L	L	L	L	*2	L	L	L	L	L	
CTL REC	MA-251 IC201(75)	O	L	L	L	L	L	L	L	L	L	L	L	H	L	H
CTL-INDEX	MA-251 IC201(79)	O	L	L	L	L	L	L	L	L	L	L	L	L	L	H
$\overline{\text{PB CTL}}$	MA-251 IC201(67)	I	H	*6	*6			*1	H/L	*2	*6	*6	*6	*1	H	
DRM PG	MA-251 IC201(68)	I	*4	*7	*7	*5	*5	*7	*7	*7	*7	*7	*7	*7	*7	
DRM FG	MA-251 IC201(69)	I	*4	*8	*8	*5	*5	*8	*8	*8	*8	*8	*8	*8	*8	
CAP FG	MA-251 IC201(70)	I	H/L	*6	*6	*5	*5	*6	H/L	*9	*6	*6	*6	*6	H/L	
CAP DA	MA-251 IC201(73)	O	*10	*10	*10	*10	*10	*11	*10	*10	*11	*11	*11	*11	*10	
DRM DA	MA-251 IC201(74)	O	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	
CTL STEP	MA-251 IC201(76)	O	L	L	L	L	L	L	L	*13	L	L	L	L	L	

*1. 30 Hz or 25 Hz pulse.
*2. Pulse at tape running.
*3. Reverse logic pulse of STEP PLS.
*4. "L" when drum rotation stop.
*5. Unstable period pulse.
*6. Pulse of period in proportion to tape speed.
*7. 30 Hz or 25 Hz pulse.
*8. 360 Hz or 300 Hz or 180/150 Hz pulse.
*9. Pulse at tape running.
*10. Approx. 2 msec period "H" or "L" pulse.
*11. Approx. 1.5 msec period "H" or "L" pulse.
*12. Approx. 3 msec period "H" or "L" pulse.
*13. "H" when FWD direction STEP drive.

6-3. SYSTEM CONTROL – MECHANISM INTERFACE (MA-251 BOARD IC201)

Signal	Pin No.	I/O	EJECTED	CASSETTE LOADING	CASSETTE UNLOADING	TEPE THREAD-ING	TAPE UNTHREAD -ING	STOP	FF	REW	PB	PB • PAUSE	SLOW	×2	CUE	REVIEW	REC	REC • PAUSE
CAM LOAD	MA-251 IC201⑬	O	L	H	L	H	L	L	L	L	L	L	L	L	L	L	L	L
CAM UNLOAD	MA-251 IC201⑭	O	L	L	H	L	H	L	L	L	L	L	L	L	L	L	L	L
CAM 12V	MA-251 IC201㉛	O		H	L	H	L											
MODE 1	MA-251 IC201㉚	I	H	L	L	*8	*8	H	H	H	H	H	H	H	H	L	H	H
MODE 2	MA-251 IC201㉙	I	L	L	L	*8	*8	L	L	L	H	H	H	H	H	H	H	H
MODE 3	MA-251 IC201㉘	I	L	L	L	*8	*8	H	H	H	L	H	H	L	L	H	L	H
MODE 4	MA-251 IC201㉗	I	L	H	H	*8	*8	H	L	L	L	L	L	L	L	L	L	L
REC PRF	MA-251 IC201⑮	I	L	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
TREEL FG	MA-251 IC201(64)	I	H/L	H/L	H/L	H/L	H/L	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
SREEL FG	MA-251 IC201(63)	I	H/L	H/L	H/L	*3	*3	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
T/E LED	MA-251 IC201㉜	O (O.D)	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP TRQ 1	MA-251 IC201㉞	O (O.D)											*8					
CAP TRQ 2	MA-251 IC201㉝	O (O.D)										L	*8					L
CAP TRQ 3	MA-251 IC201⑧	O (O.D)							H	H			*8		H	H		
$\overline{\text{CAP STOP}}$	MA-251 IC201㉟	O (O.D)	L	L	L	H	H	L	H	H	H	L	*5	H	H	H	H	L
CAP RVS	MA-251 IC201(72)	O	H			L	H	H/L	L	H	L	L	L/*5	L	L	H	L	L
CAP DA	MA-251 IC201(73)	O																
T SENS	MA-251 IC201(61)	I	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
S SENS	MA-251 IC201(62)	I	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7

*1. "H" when mechanism mode transition.
*2. "L" when erasing protection tab is bent, "H" when not bent.
*3. Pause of period in proportion to reel rotating speed.
*4. Approx. 2 msec period "H" pulse.
*5. Pulse at tape running.
*6. "L" when tape running and CAP RVS is "H".
*7. Normally "L". 2 msec period "H" pulse when tape top or tape end is detected.
*8. Uncertainty.

6-4. SYSTEM CONTROL – SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE (MA-251 BOARD IC201)

Signal	Pin No.	I/O	I/O level
$\overline{\text{ASURA RESET}}$	MA-251 IC201㊵	I	Normally "H", "L" when service interruption is detected or restored.
$\overline{\text{ASURA CS}}$	MA-251 IC201㊹	I	Chip select signal from timer microprocessor. V period "L" pulse.
S IN 0	MA-251 IC201㊺	I	Serial communication data from timer microprocessor. V period "L" pulse.
S OUT 0	MA-251 IC201㊻	O	Serial communication data to timer microprocessor. V period "L" pulse.
$\overline{\text{S CLK}}$	MA-251 IC201㊼	I	Serial communication clock with timer microprocessor. V period "L" pulse.

6-5. SYSTEM CONTROL – AUDIO BLOCK INTERFACE (MA-251 BOARD IC201)

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE LOADING	TAPE UNLOADING	PB	PB • PAUSE	SLOW	×2	CUE	REVIEW	REC	REC • PAUSE
AF ENV	MA-251 IC201(59)	I	AF RF envelope signal input terminal for automatic tracking.										
A MUTE	MA-251 IC201⑰	O (O.D)	L	L	L	*1	H	H	H	H	H	L	L
NA REC $\bar{P}$	MA-251 IC201⑪	O	L	L	L	L	L	L	L	L	L	H	L
AF REC $\bar{P}$	MA-251 IC201④	O	L	L	L	L	L	L	L	L	L	H	L
AF SWP	MA-251 IC201⑩	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
$\overline{\text{FULL ERS}}$	MA-251 IC201㊱	O (O.D)	H	H	H	H	H	H	H	H	H	L	H

*1. 30 Hz 50% duty pulse approx. 5 msec delayed from RF SW P.
*2. Selected by REC mode selector. SP mode: "L".
*3. Selected by tape recording mode. SP mode: "L".

6-6. SYSTEM CONTROL AND RF MODULATOR – INPUT SELECTION BLOCK INTERFACE

Signal	Pin No.	I/O	I/O level
LINE 1	MA-251 IC201(83)	O	*1. Input select control signal.
LINE 2	MA-251 IC201(82)	O	

*1.

Input / Signal	Tuner	LINE 1	LINE 2
LINE 1 (83)	L	H	L
LINE 2 (82)	L	L	H

6-7. SERVO/SYSTEM CONTROL MICROPROCESSOR PIN FUNCTION
(MA-251 BOARD IC201 CXP-87248A-008Q: SLV-790, 960)

Pin No.	Pin name	I/O	Function
1	RF SWP	O	RF switching pulse output
2	QVD	O	Quasi VD pulse output
3	QHD ENABLE	O	Quasi HD voltage level control
4	AF REC $\overline{\text{P}}$	O	"H" output when hi-fi audio REC
5	$\overline{\text{NTSC}}$	O	"H" PAL "L" when NTSC mode
6	FE ON	O	Flying erase ON/OFF
7	REC CTL	O	REC CTL signal output
8	CAP TRQ3	O	Capstan current control
9	APC2	I	APC control input terminal 2
10	APC1	I	APC control input teminal 1
11	$\overline{\text{NA REC P}}$	I/O	Normal audio recording mode H: recording mode
12	$\overline{\text{SP}}$/EP/LP	O	"L" when SP mode "H" when EP/LP mode
13	CAM LOAD	I	Loading motor rotating direction control
14	CAM UNLOAD	I	Loading motor rotating direction control
15	C IN (REC PRF)	I	Erasing protection bab, cassette IN detection input
16	RENTAL	I/O	YNR control
17	NC	O	Not used
18	NC	–	Not used
19	358 NTSC	I	Tuner audio selection signal H: 3.58 XTAL
20	NT JUDGE	I	4.43/3.58 judge input.
21	BACK ON	O	Not used
22	PAL 60	O	NTSC PB control signal "H" when NTSC PB on pal TV
23	$\overline{\text{TV}}$/VTR	O	"L" when VTR mode "H" when TV mode
24	AV CONT	O	ON/OFF control
25	MESECAM	I/O	"L" in NT mode
26	CBC ON	O	Cable box control on
27	MODE 4	I	Mechanism section CAM encoder input
28	MODE 3	I	Mechanism section CAM encoder input
29	MODE 2	I	Mechanism section CAM encoder input
30	MODE 1	I	Mechanism section CAM encoder input
31	CAM 12V	O	CAM motor reference voltage
32	T/E LED	O	T/E LED output
33	CAP TRQ2	O	Capstan current control signal 2 L: FF/REW to STOP
34	CAP TRQ1	O	Capstan current control signal 1 L: SLOW speed down
35	$\overline{\text{CAP STOP}}$	O	Capstan STOP signal output
36	$\overline{\text{FULL ERS}}$	O	Full erase control
37	NC	O	Not used
38	NC	O	Not used
39	MP	I	Fixed to L
40	$\overline{\text{ASURA RESET}}$	I	System reset input
41	VSS	–	GND
42	XTAL	–	System clock 16 MHz
43	EXTAL	–	System clock 16 MHz
44	$\overline{\text{ASURA CS}}$	I	S/S microcomputer chip select signal
45	S IN 0	I	Serial communication signal
46	S OUT 0	O	Serial communication signal
47	$\overline{\text{SCLK}}$	O	Serial communication signal
48	NICOL ON	O	?
49	F MONO	O	Tuner Audio Select
50	EDIT	O	EDIT control

Pin No.	Pin name	I/O	Function
51	LINE 3 CONT	O	Input selection control signal 3
52	AVSS	–	UNSW GND
53	AVREF	–	AD port reference input UNSW 5V
54	AVDD	–	UNSW 5V
55	APC ERROR	I	APC error input
56	NTPB SW	I	NTSC PB switch
57	DEST2 DEW	I	DEW sensor input Not used
58	$\overline{\text{VA ADJ}}$	I	ADJ mode 0V: SWP Adj 2.5V: HIFI Adj
59	AF ENV	I	Hi-Fi audio playback signal envelope
60	RF ENV	I	Video playback signal envelope
61	T SENS	I	Take up end sensor input
62	S SENS	I	Supply end sensor input
63	S REEL FG	I	S side reel FG input
64	T REEL FG	I	T side reel FG input
65	VDD	I	5V
66	V SYNC	I	Composite sync input
67	$\overline{\text{PB CTL}}$	I	Playback CTL input
68	DRM PG	I	Drum PG input
69	DRM FG	I	Drum FG input
70	CAP FG	I	Capstan FG input
71	POWER SAVE CONT	O	Power save control signal output
72	CAP RVS	O	Capstan reverse control H when Reverse
73	CAP DA	O	Capstan error D/A output
74	DRUM DA	O	Drum PG input
75	CTL RED	O	"H" CTL write
76	CTL STEP	O	CTL amp, STEP operation control
77	VDD	I	5V
78	VDD	O	5V
79	CTL INDEX	O	CTL INDEX signal input
80	$\overline{\text{SO1}}$	I/O	Signal for serial communication
81	$\overline{\text{SCLK1}}$	I/O	Signal for serial communication
82	LINE 2 CONT	I	Input selection control signal 2
83	LINE 1 CONT	O	Input selection control signal
84	APC PWM	O	PWM output for APC
85	NC	I	Not used
86	NC	–	Not used
87	NC	–	Not used
88	VSS	–	GND
89	VDD	–	5V
90	NC		Not used
91	ORC SETTEI	O	H when ORC measurement
92	A MUTE	O	"H" when audio Mute
93	$\overline{\text{SP}}$	O	Tape speed Select
94	POWER CONT 2	O	Power control signal 2
95	NA PB	O	Audio output control signal H when normal audio playback
96	AF REC	O	"H" output when hi-fi audio REC
97	JOG	O	"H" when trick play mode
98	$\overline{\text{V PB}}$	O	Video system playback mode "L" when playback
99	STEP PLS	O	Step pulse H when Capstan step driving
100	AF SWP	O	AF switching pulse output

6-8. TUNER/TIMER MODE CONTROL PIN FUNCTION (MA-251 BOARD IC151 CXP82948-002Q)

Pin. No.	Pin Name	I/O	Function
1	$\overline{\text{EDS DAV}}$	I	Line 21H output pulse. Pulse signal synchronized with line 21 of input video signal.
2	$\overline{\text{PAWER FAIL}}$	I	Power failure detect signal input.
3	H DET	I	Video signal detect signal input
4	SIRCS IN	I	SIRCS signal input
5	EEP BUSY	I	EEP Busy signal input
6	SIRCS OUT	O	SIRCS signal output
7	BUZZER	O	Buzzer output
8	$\overline{\text{STEREO}}$	O	Tuner audio mode input (stereo)
9	EEP $\overline{\text{RST}}$	O	EEP ROM reset signal output (stereo)
10	SCK0	O	Clock for serial communication
11	SI0	I	Serial data input
12	SO0	O	Serial data output
13	EEP $\overline{\text{CS}}$	O	EEP ROM chip select signal output
14	LANC IN	I	LANC input
15	LANCE OUT	O	LANC output
16	A/D0	I	Key reading A/D input
17	A/D1	I	Key reading A/D input
18	A/D2	I	Key reading A/D input
19	A/D3	I	Key reading A/D input
20	A/D4	I	Key reading A/D input
21	A/D5	I	Key reading A/D input
22	A/D6	I	Key reading A/D input
23	AFT	I	Key reading A/D input
24	AVDD	–	UNSW 5V
25	AV REF	–	AD port reference input UNSW 5V
26	SCL0	O	I^2C BUS (clock)
27	CG $\overline{\text{CS}}$	O	Character generator chip select signal
28	SDA0	O	I^2C BUS (data)
29	LED $\overline{\text{CS}}$	O	LED driver chip select signal
30	AVSS	–	UNSW GND
31	EXTAL	–	System clock Not used
32	XTAL	–	
33	VSS	–	GND
34	$\overline{\text{RST}}$	I	Reset signal in
35	PLL CLK	O	Tuner clock signal
36	PLL DATA	O	Tuner data signal
37	PLL ENABLE	O	Tuner enable signal
38	MAIN/$\overline{\text{SAP}}$	O	Normal audio MAIN/SAP select control
39	SAP	I	MAIN/SAP jude input
40	EDS $\overline{\text{CS}}$	O	EDS microcomputer chip select

Pin. No.	Pin Name	I/O	Function
41	TA MUTE	O	Tuner audio mute control signal
42	AUTO RESET	O	"H" during auto preset
43	VFDP	–	–30V
44-62	SEG 1-19	O	LCD segment output
63	N.C.	–	Not used
64	N.C.	–	Not used
65	N.C.	–	Not used
66-71	GRID 6-1	O	LCD grid output
72	VDD	–	UNSW 5V
73	TX	–	Connected to oscillator for clock
74	TEX	–	
75	NC/VPP	–	Connect to +5V
76	ASURA $\overline{\text{CS}}$	O	S/S microcomputer chip select
77	$\overline{\text{SYS RESET}}$	O	System reset signal output
78	POWER CONT 1	O	Power supply control signal output
79	POWER CONT 2	O	Power supply control signal output for EDS
80	CG V	I	Vertical sync. signal input

6-9. SYSTEM CONTROL – VIDEO BLOCK INTERFACE (MA-252 BOARD IC201)

Signal	Pin No.	I/O	STOP FF/ REW	TAPE THREAD-ING	TAPE UNTHREAD-ING	PB	PB • PAUSE	SLOW	×2	CUE	REVIEW	REC	REC • PAUSE
$\overline{\text{V PB}}$	MA-252 IC201(96)	O	H	H	H	L	L	L	L	L	L	H	H
RF SWP (SW30)	MA-252 IC201①	O	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
QVD	MA-252 IC201②	O	L	L	L	*3	*4	*4	*4	*4	*4	L	L
$\overline{\text{SP}}$	MA-252 IC201(93)	O	*6	*6	*6	*7	*7	*7	*7	*7	*7	*6	*6
$\overline{\text{SP}}$/EP/EP	MA-252 IC201⑫	O	*12	*12	*12	*7	*7	*7	*7	*7	*7	*12	*12
V SYNC	MA-252 IC201(66)	I	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8
CTL REC	MA-252 IC201(75)	O	L	L	L	L	L	L	L	L	L	H	L
LINE 1	MA-252 IC201⑥	O	L	L	L	L	L	L	L	L	L	L	L
JOG	MA-252 IC201(97)	O	L	L	L	L	H	H	H	H	H	L	L
ORC SETTEI	MA-252 IC201(91)	O	L	L	L	L	L	L	L	L	L	*13	*13

*1. Foward slow mode: "HI-Z (2.5 V)" in tape stop, "L" in tape running (approx. 40 msec.).
Foward slow mode: "HI-Z (2.5 V)" in tape stop, "H" in tape running SP mode (approx. 40 msec.).
"L" in tape running EP mode (approx. 40 msec.).
*2. Synchronized with drum rotation. 30 Hz 50% duty pulse.
*3. Normally "L". "H" when CTL signal is not generated.
*4. V period "H" pulse.
*5. "H" in SP mode. "L" in LP/EP mode.
*6. Selected by REC mode. SP mode: "L"
*7. Selected by tape recording mode.

Mode / Signal	SP	LP	EP
SP (91)	L	H	H
$\overline{\text{LP}}$ (93)	L	H	L

*8. Composite Sync signal (positive).
*9. "H" when menu screen or blue back screen.
*10. "HI-Z (2.5 V)" in LP/EP mode. "H" in SP mode.
*11. Selected by REC mode: "H" EP mode.
*12. Selected by REC mode: "H" LP mode.
*13. "H" during APC measurement.

6-10. SYSTEM CONTROL – SERVO PERIPHERAL CIRCUIT INTERFACE (MA-252 BOARD IC201)

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREAD -ING	TAPE UNTHREAD -ING	PB	PB • PAUSE	SLOW	CUE	×2	REVIEW	REC	REC • PAUSE	PB INDEX WRT/ERS
REC CTL	MA-252 IC201⑦	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	
$\overline{\text{CAP STOP}}$	MA-252 IC201㉟	O (O.D)	L	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	L	*3	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	
STEP PLS	MA-252 IC201(99)	O	L	L	L	L	L	L	L	*2	L	L	L	L	L	
CTL REC	MA-252 IC201(75)	O	L	L	L	L	L	L	L	L	L	L	L	H	L	H
CTL-INDEX	MA-252 IC201(79)	O	L	L	L	L	L	L	L	L	L	L	L	L	L	H
$\overline{\text{PB CTL}}$	MA-252 IC201(67)	I	H	*6	*6			*1	H/L	*2	*6	*6	*6	*1	H	
DRM PG	MA-252 IC201(68)	I	*4	*7	*7	*5	*5	*7	*7	*7	*7	*7	*7	*7	*7	
DRM FG	MA-252 IC201(69)	I	*4	*8	*8	*5	*5	*8	*8	*8	*8	*8	*8	*8	*8	
CAP FG	MA-252 IC201(70)	I	H/L	*6	*6	*5	*5	*6	H/L	*9	*6	*6	*6	*6	H/L	
CAP DA	MA-252 IC201(73)	O	*10	*10	*10	*10	*10	*11	*10	*10	*11	*11	*11	*11	*10	
DRM DA	MA-252 IC201(74)	O	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	
CTL STEP	MA-252 IC201(76)	O	L	L	L	L	L	L	L	*13	L	L	L	L	L	

*1. 30 Hz or 25 Hz pulse.
*2. Pulse at tape running.
*3. Reverse logic pulse of STEP PLS.
*4. "L" when drum rotation stop.
*5. Unstable period pulse.
*6. Pulse of period in proportion to tape speed.
*7. 30 Hz or 25 Hz pulse.
*8. 360 Hz or 300 Hz or 180/150 Hz pulse.
*9. Pulse at tape running.
*10. Approx. 2 msec period "H" or "L" pulse.
*11. Approx. 1.5 msec period "H" or "L" pulse.
*12. Approx. 3 msec period "H" or "L" pulse.
*13. "H" when FWD direction STEP drive.

6-11. SYSTEM CONTROL – MECHANISM INTERFACE (MA-252 BOARD IC201)

Signal	Pin No.	I/O	EJECTED	CASSETTE LOADING	CASSETTE UNLOADING	TEPE THREAD-ING	TAPE UNTHREAD -ING	STOP	FF	REW	PB	PB • PAUSE	SLOW	×2	CUE	REVIEW	REC	REC • PAUSE
CAM LOAD	MA-252 IC201⑬	O	L	H	L	H	L	L	L	L	L	L	L	L	L	L	L	L
CAM UNLOAD	MA-252 IC201⑭	O	L	L	H	L	H	L	L	L	L	L	L	L	L	L	L	L
CAM 12V	MA-252 IC201㉛	O		H	L	H	L											
MODE 1	MA-252 IC201㉚	I	H	L	L	*8	*8	H	H	H	H	H	H	H	H	L	H	H
MODE 2	MA-252 IC201㉙	I	L	L	L	*8	*8	L	L	L	H	H	H	H	H	H	H	H
MODE 3	MA-252 IC201㉘	I	L	L	L	*8	*8	H	H	H	L	H	H	L	L	H	L	H
MODE 4	MA-252 IC201㉗	I	L	H	H	*8	*8	H	L	L	L	L	L	L	L	L	L	L
C IN (REC PRF)	MA-252 IC201⑮	I	L	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
TREEL FG	MA-252 IC201(64)	I	H/L	H/L	H/L	H/L	H/L	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
SREEL FG	MA-252 IC201(63)	I	H/L	H/L	H/L	*3	*3	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
T/E LED	MA-252 IC201㉜	O (O.D)	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP TRQ 1	MA-252 IC201㉞	O (O.D)											*8					
CAP TRQ 2	MA-252 IC201㉝	O (O.D)										L	*8					L
CAP TRQ 3	MA-252 IC201⑧	O (O.D)							H	H			*8		H	H		
$\overline{\text{CAP STOP}}$	MA-252 IC201㉟	O (O.D)	L	L	L	H	H	L	H	H	H	L	*5	H	H	H	H	L
CAP RVS	MA-252 IC201(72)	O	H			L	H	H/L	L	H	L	L	L/*5	L	L	H	L	L
CAP DA	MA-252 IC201(73)	O																
T SENS	MA-252 IC201(61)	I	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
S SENS	MA-252 IC201(62)	I	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7

*1. "H" when mechanism mode transition.
*2. "L" when erasing protection tab is bent, "H" when not bent.
*3. Pause of period in proportion to reel rotating speed.
*4. Approx. 2 msec period "H" pulse.
*5. Pulse at tape running.
*6. "L" when tape running and CAP RVS is "H".
*7. Normally "L". 2 msec period "H" pulse when tape top or tape end is detected.
*8. Uncertainty.

SECTION 7
ADJUSTMENTS

During the adjustment, see the Parts Arrangement Diagram for Adjustment on page 7-10.

7-1. MECHANICAL ADJUSTMENTS

Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENT IV.

7-2. ELECTRICAL ADJUSTMENTS

2-1. PRE-ADJUSTMENT PREPARATIONS

Necessary items and indications for total adjustment of electric circuit of this machine will be described in this chapter.

2-1-1. Instruments to be Used.

1) Color TV
2) Oscilloscope 1or 2 phenomena, band more than 30 MHz, deley mode, as provided.
3) Frequency counter (min. 8 digits)
4) NTSC pattern generator
5) Digital voltmeter
6) Audio level meter
7) Audio generator
8) Modulation Analyzer
9) Distortion factor meter
10) Attenuator
11) Alignmeter tape
    Part Code: 8-192-605-32 (KRV-51N2)
13) Extension cable (13P)
    Part code: J-6090-054-A
    RP-197/198/202/203 (CN501) ↔ DRUM

2-1-2. Connection

Unless otherwise specified, connect and adjust the measuring instruments as shown in the following diagram.

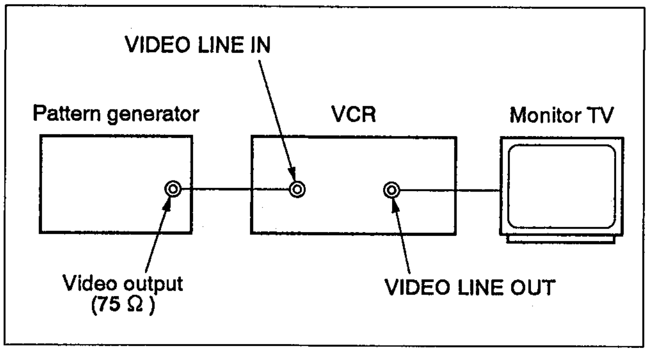


Fig. 7-2-1

2-1-3. Set-up of Adjutment

In this adjustment, NTSC pattern generator is connected with LINE input signal terminal. When check to tuner, connected AERIAL terminal. Check that the amplitudes of video signal NTSC signal, of picture portions, and of burst signals are flat at approximately 0.3, 0.7 and 0.3 V, respectively, and that the level ratio of the burst signal and "red" signal are 0.30: 0.66. Fig. 7-2-2. shows video signals (color bars) used in adjusting the video section.

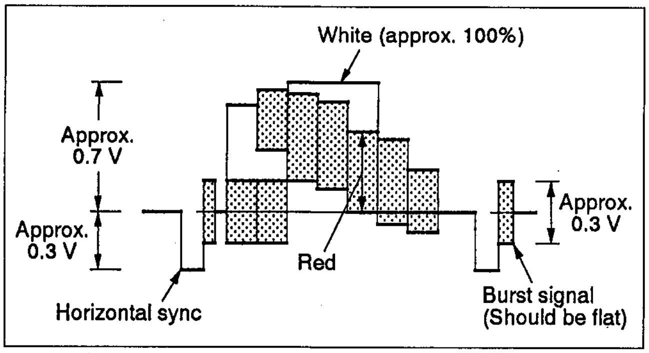


Fig. 7-2-2.

2-1-4. Alignment Tape
[Alignment Tape (KRV-51N2)]

	Mode	Time	Video signal	Audio signal (HiFi/Normal)
1	SP	Seven minutes	Color bar	400Hz
2		Three minutes	Monoscope	400Hz
3	EP	Seven minutes	Color bar	400Hz
4		Three minutes	Monoscope	—

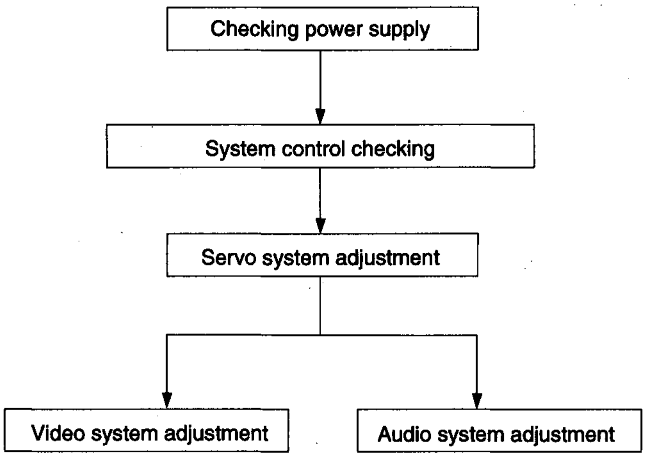
2-1-5. Specified I/O Level and Impedance

Input/output terminal

Video inputs	LINE IN : phono jack 1 Vp-p, 75Ω, unbalanced, sync negative
Audio inputs	LINE IN : phono jacks 47 kΩ, –7.5 dBs (0 dBs = 0.775 Vrms) More than 10 kΩ+, –4 dBs
Video outputs	LINE OUT : phono jack 1 Vp-p, 75Ω, unbalanced, sync negative
Audio outputs	LINE OUT : phono jacks –7.5 dBs at load impedance 47kΩ Output impedance : less than 10Ω

2-1-6. Adjusting Sequence

Make the electrical adjustment in the following sequence.



2-2. POWER SUPPLY CHECK (PS-355/356/367/368 BOARD)

Mode	E-E
Measuring Instrument	Digital voltmeter
+F, –F check	
Measurement Point	Pin ④ (+), ①(–) of CN101
Specified Value	4.3±1Vdc
–30V check	
Measurement Point	Pin ② of , CN101
Specified Value	-30±3Vdc
–8V check	
Measurement Point	Pin ⑤ of CN101
Specified Value	13.5±2Vdc
D6V check	
Measurement Point	Pin ⑥ of CN101
Specified Value	5.9±0.5V
SW12V	
Measurement Point	Pin ⑧ of CN101
Specified Value	12±1Vdc
MTR12V check	
Measurement Point	Pin ⑫ of CN101
Specified Value	12±0.5Vdc
13 V check	
Measurement Point	Pin ⑭ of CN101
Specified Value	13±1Vdc
+38V check	
Measurement Point	Pin ⑯ of CN101
Specified Value	38.0±3Vdc
SW5 V check	
Measurement Point	Pin ⑰ of CN101
Specified Value	5 ±0.5 Vdc

Checking Method:

1) Confirm that each voltage meets its specified value.

2-3. SYSTEM CONTROL CHECK

2-3-1. Clock Check (MA-251/252)

Purpose:

Adjust to improve the clock precision. When it is out of order, errors gradually increases.

Measurement point	Pin ⑦ of IC151 : MA-251 Board Pin (83) of IC201 : MA-252 Board
Measurement Equipment	Frequency counter (Interval counter mode)
Specified Value	0.1249995±0.0000005 sec

Confirmation Method:

1) Connect to the GND from IC151 pin ⑲ through a resistor 22kΩ (1-249-489-00): MA-251 board
2) Connect Pin ㊹ of IC401 to ground. (The set goes to adjusting mode.): MA-252 Board
3) Connect the frequency counter as shown below.
4) Confirm that the oscillation frequency is the specified value.

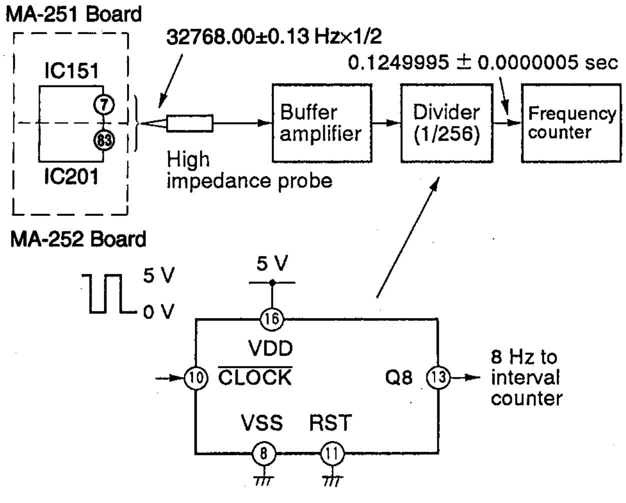

MA-251 Board
IC151
⑦
(83)
IC201
MA-252 Board
32768.00±0.13 Hz×1/2
0.1249995 ± 0.0000005 sec
High impedance probe
Buffer amplifier
Divider (1/256)
Frequency counter
5 V
0 V
5 V
16
VDD
10
CLOCK
Q8
13
8 Hz to interval counter
VSS
RST
8
11
MC14020B or equivalent

Fig. 7-2-3.

2-4. SERVO SYSTEM Adjustment

2-4-1. Switching Position Adjustment (MA-251/252 Board)

Purpose:

Adjust the interval between A ch and B ch of tape playback output. Improve the interchangeability with other tapes and sets.

When it is out of order, the interval appears on the screen, the screen is disturbed.

Mode	PB
Signal	Alignment tape SP mode color bar
Measurement Point	CH1: VIDEO LINE OUT CH2: Pin ③ of CN502 (RP-197/198/202/203 board) (RF SWP)
Measuring Instrument	Oscilloscope
Specified Value	6.5±0.5H (410±32μsec)

Adjusting Method:

1) Connect IC201 pin (58) to the GND for about 1 second to activate the RF switching position adjustment mode.
2) Using the channel + and – buttons, adjust to 410±32μsec (6.5±0.5H).

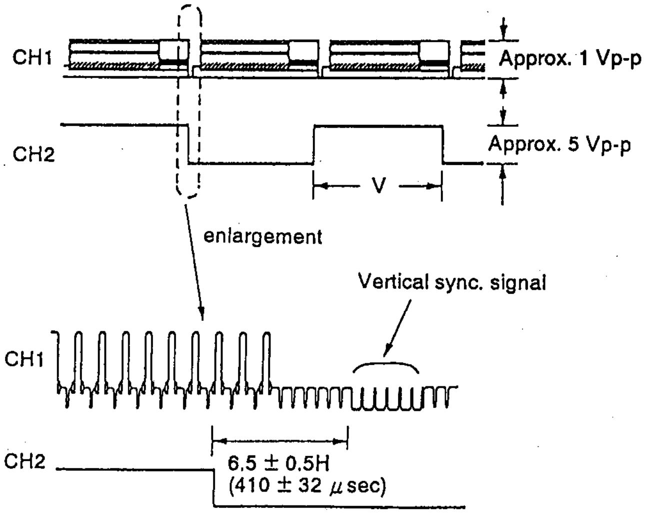

CH1
Approx. 1 Vp-p
CH2
Approx. 5 Vp-p
V
enlargement
Vertical sync. signal
CH1
CH2
6.5 ± 0.5H
(410 ± 32 μsec)

Fig. 7-2-4.

2-5. VIDEO SYSTEM ADJUSTMENT

Adjust the video system in the following sequence as a rule. The color video signal supplied from the pattern generator is used as a video input signal for video system adjustment in the recording mode. Make sure that sync. and color burst signals meet requirements specified at set up of adjustment shown in Fig. 7-2-1.

[Adjustment Sequence]

2-5-1. Recording Y Signal Level Check
2-5-2. White Clip, Dark Clip Check
2-5-3. Playback Y Signal Level Check
2-5-4. Recording Chroma Level Check
2-5-5. Sync. AGC Check
2-5-6. X'tal Oscillation Frequency Check
2-5-7. VCO Oscillation Frequency Adjustment

2-5-1. Recording Y Signal Level Check (MA-251/252 Board)

Purpose:

Check the brightness signal level after passing through the V/C separating circuit.

Mode	E-E
Signal	Color bar
Measurement point	Emitter of Q352
Measurement equipment	Oscilloscope
Specified value	950±100mVp-p

Confirmation Method:

1) Confirm that the record Y level is 950±100mVp-p.

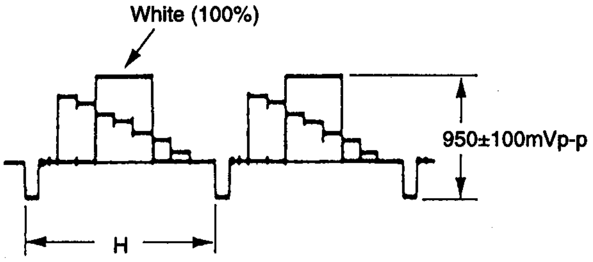


Fig. 7-2-5.

2-5-2. White Clip, Dark Clip Check (MA-251/252 Board)

Purpose:

Confirm that no overshoot is generated by the pre-emphasis circuit. If shifted, the signals are overmodulated, thus causing a noise in the images.

Mode	E-E
Signal	Color bar
Measurement point	Pin 7 of IC302
Measurement equipment	Oscilloscope
Specified value	White clip: 190±15% Dark clip: 52±10%

Confirmation Method:

1) Confirm that the white clip is 190±15%, on condition that the level between white and sync. is 100%.
2) Confirm that the dark clip is 52±10%, on condition that the level between white and sync. is 100%

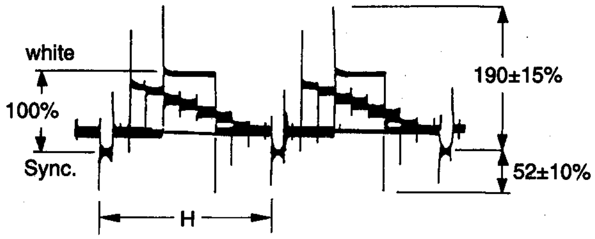


Fig. 7-2-6.

2-5-3. Playback Y Signal Level Check (MA-251/252 Board)

Purpose:

Confirm that the playback Y signal level is correct.

Mode	PB
Signal	Alignment tape SP color bar
Measurement point	VIDEO LINE OUT
Measurement equipment	Oscilloscope
Specified value	2.05±0.18Vp-p

Note: Make this adjustment with the EDIT switch turned off. (MA-251 Board)

Confirmation Method:

1) Confirm that the play Y level is 2.05±0.18Vp-p.

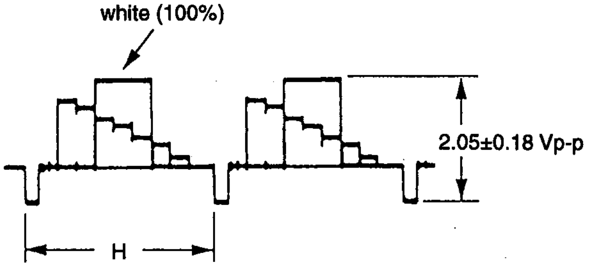


Fig. 7-2-7.

2-5-4. Recording Chroma Level Check (MA-251/252 Board)

Purpose:

Check the chroma signal level after passing through the Y/C separating circuit.

If shifted, the image is roughened and another color may appear on the edges.

Mode	E-E
Signal	Color bar
Measurement point	Pin ㊳ of IC302
Measurement equipment	Oscilloscope
Specified value	190±30mVp-p

Confirmation Method:

1) Confirm that the record chroma level is 190±30mVp-p.

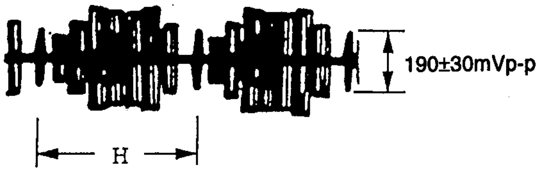


Fig. 7-2-8.

2-5-5. Sync. AGC Check (MA-251/252 Board)

Purpose:

Confirm that the video level is correct.

Mode	E-E
Signal	Color bar
Measurement point	VIDEO LINE OUT
Measurement equipment	Oscilloscope
Specified value	2.05±0.14Vp-p

Note: Video output terminal must be terminated at 75Ω.

Confirmation Method:

1) Confirm that the sync. AGC level is 2.05±0.14Vp-p.

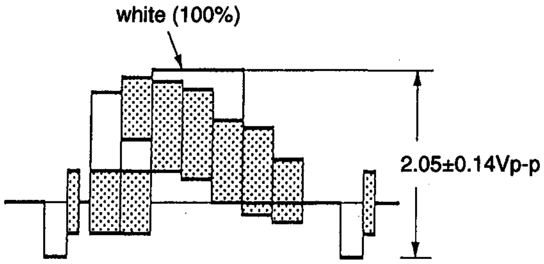


Fig. 7-2-9.

2-5-6. X'tal Oscillation Frequency Check (MA-251/252)

Purpose:

Confirm that the fsc is correct.

Mode	PB
Signal	Alignment tape SP color bar
Measurement point	Pin ㉗ of IC302
Measurement equipment	Frequency counter, Oscilloscope
Specified value	3,579,545±82Hz

Note: connect the frequency counter through a probe of high input impedance (about 10MΩ) and low capacity (10pF or less).

Confirmation Method:

1) Confirm that the frequency is 3,579,545±82Hz
2) Confirm that the amplitude is 450±200mVp-p.

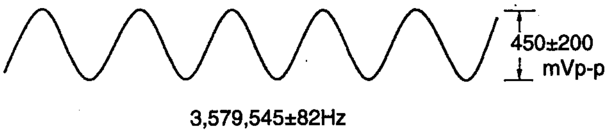


Fig. 7-2-10.

2-5-7. VCO Oscillation Frequency Adjustment (MA-252 Board)

Purpose:

Adjust to set the character position on the screen.

Mode	E-E
Signal	Color bar
Measurement point	Pin ㉖ of IC401
Measuring Instrument	Oscilloscope (DC mode)
Adjusting Element	CT401
Specified value	+2.75±0.05 V

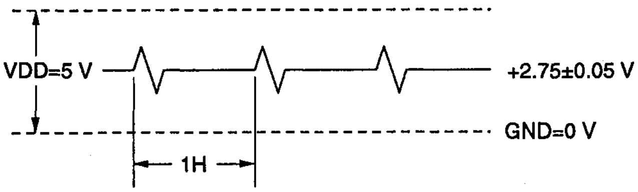


Fig. 7-2-11.

2-6. AUDIO SYSTEM ADJUSTMENTS

Adjust both Lch and Rch.

[Connection]

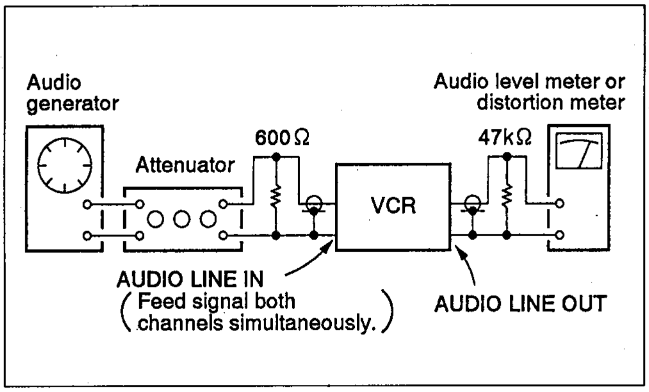

Audio generator
Audio level meter or distortion meter
600Ω
47kΩ
Attenuator
VCR
AUDIO LINE IN
(Feed signal both channels simultaneously.)
AUDIO LINE OUT

Fig. 7-2-12

2-6-1. Hi-Fi Audio System Adjustment

Set switches and knobs to the following positions to make adjustment unless otherwise specified.

INPUT SELECT switch .... LINE
AUDIO MONITOR .... STEREO

[Adjusting Sequence]

1. VCO fo adjustment
2. Deviation check
3. BPF fo adjustment
4. AF switching position

1. VCO fo Adjustment (MA-251/252 Board)

Purpose:

Adjust to have interchangeability in HiFi audio.
When it is out of order, the sound is distorted.

Mode	REC
Signal	No signal
Measuring Instrument	Frequency counter
1.3 MHz Adjustment	
Measurement Point	Pin ① of CN501 Auto tracking ON (Remote commander)
Adjusting Element	RV521 (R CH)
Specified Value	1.3 MHz ± 1 kHz
1.7 MHz Adjustment	
Measurement Point	Pin ① of CN501 Auto tracking OFF (Remote commander)
Adjusting Element	RV531 (R CH)
Specified Value	1.7 MHz±1kHz

Note: Connect the frequency counter through a probe of high input impedance (more than 1 MΩ) and low capacity (10 pF or less).

Connection:

Connect pin ② and ③ of CN881 with a jumper wire.

Adjusting Method:

1) Connect the frequency counter to pin ① of CN501.
2) Adjust each volume so that each frequency meets its specified value.

2. Deviation Check (MA-251/252 Board)

Purpose:

Set the HiFi audio signal level to specified value.
Adjust to have interchangeability with other tapes and sets.
When it is out of order, the volume of sound is different on playback.

Mode	REC
Signal	Pin ② (Lch), ① (Rch) of IC501 400Hz –7.5 dBs (920m Vp-p)
Measurement Point	pin ① of CN501 Lch: Auto tracking ON (Remote commander) Rch: Auto tracking OFF (Remote commander)
Measurement Equipment	Modulation analyzer
Specified Value	50±5kHz

Connection:

Connect pin ② and ③ of CN881 with a jumper wire.

3. BPF fo Adjustment (MA-251/252 Board)

Purpose:

Adjust to separate carrier component precisely and to operate normally the filter for cutting video signal.
When it is out of order, the sound is distorted.

Mode	PB
Signal	1.505 MHz Input 200 mVp-p: Pin ③ of CN501
Measurement point	Pin ① of CN501
Measuring Instrument	Oscilloscope
Adjusting Element	RV541

Note: Talk a trigger from AF SWP (Pin ⑥ of CN501).

Connection:

1) Feed 1.505 MHz, 200 mVp-p sine wave to Pin ③ of CN503.

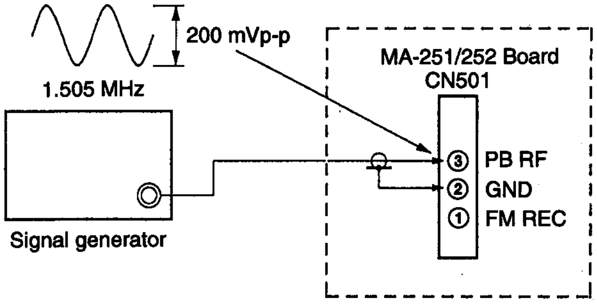


Fig. 7-2-13.

Adjusting method:

1) In the play mode, turn off the auto tracking from the remote controller.
2) Adjust RV541 so that the amplitudes of A and B are on the same level (±2mVp-p).

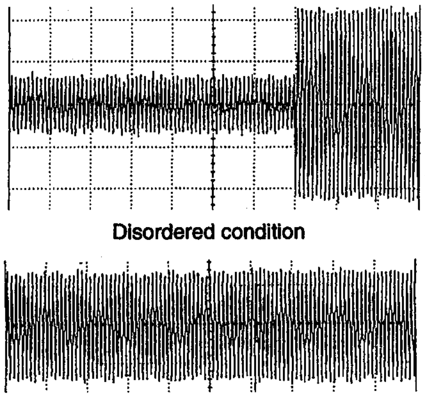


Fig. 7-2-14

4. AF Switching Position Adjustment (MA-251/252 Board)

Purpose:

Adjust the interval between A CH and B CH of tape playback output. Improve the interchangeability with other tapes and sets.

When it is out of order, noisy sound is increased and big noise is heard.

Mode	PB
Signal	Alignment tape SP mode color bar
Measurement point	CH1: Pin ③ of CN502 (RP-197/198/201/202 Board) CH2: Pin ① of CN707 (RP-197/198/201/202 Board)
Measuring Instrument	Oscilloscope
Specified Value	Fig. 7-2-15

Adjusting method:

1) Connect IC201 pin 58 to the GND for about 1 second to activate the RF switching position adjustment mode.
2) Press the record button to activate the AF switching position adjustment mode.
3) Using the channels + and – buttons, minimize a chipped portion. At this time, confirm that a noisy sound is not heard.

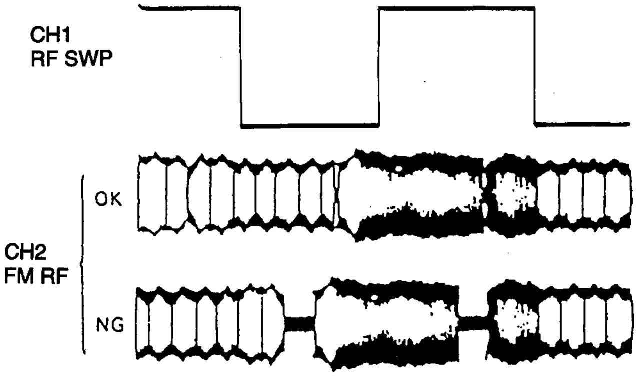


Fig. 7-2-15.

2-6-2. Normal Audio System Adjustment

- Make adjustment in the SP mode, unless otherwise specified. Use a normal VHS cassette for an adjustment tape.
- Set AUDIO MONITOR to normal.

[Adjustment Sequence]

1. **ACE Head Adjustment**
2. **E-E Output Level Check**
3. **Recording Bias Adjustment**
4. **Overall Level Characteristic and Distortion Factor Check**
5. **Overall S/N Check**

1. ACE Head Adjustment

Refer to the service manual of VHS MECHANICAL ADJUSTMENT IV.

2. E-E Output Level Check

Purpose:

Confirm that the output level against the reference input is within the specification.

Mode	E-E
Signal	L, R: 400Hz, –7.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter
Specified value	–7.5±2dBs

Confirmation Method:

1) Simultaneously input a signal of 400Hz, –7.5dBs to both L and R channels of Audio Line Input.
2) Confirm that the audio output level is –7.5±2dBs.

3. Recording Bias Check (MA-251/252 Board)

Purpose:

Confirm that the frequency characteristic is within the specification.

Mode	REC and PB (SP mode)
Signal	400Hz, –27.5 dBs 7kHz, –27.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter
Specified value	0±3dB

Note: Tape path adjustment must have been completed.

Confirmation Method:

1) Supply a signal of 400 Hz, -27.5 dBs to both L and R channels of Audio Line Input.
2) Connect the audio level meter to the Audio Line Output.
3) Adjust the attenuator so that the audio level meter will indicate –27.5 dBs.
4) Make recording in the SP mode.
5) Set an audio line input signal to 7 kHz and make recording.
6) Playback a recorded portion, and measure output levels at 400 Hz and 7 kHz.
7) Confirm that the 7 kHz playback output level within a range of the 400 Hz playback output level 0±1 dB.

4. Overall Level Characteristic and Distortion Factor Check

Purpose:

Check the record level, play level, and distortion factor against the reference input.

Mode	REC and PB (SP mode)
Signal	400Hz, –7.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter and distortion factor meter
Specified value	Playback level: –7.5±3dBs Distortion factor: 4% or less

Confirmation Method:

1) Supply an audio signal of 400Hz, –7.5 dBs simultaneously to both L and R channels of Audio Line Input.
2) Make recording
3) Play back a recorded portion.
4) Confirm that a playback level is –7.5±3dBs.
5) Confirm that a distortion factor is within 4%.

5. Overall S/N Check

Purpose:

Confirm that the S/N is within the specification.

Mode	REC and PB (SP mode)
Signal	No signal
Measurement point	Audio output terminal
Measurement equipment	Audio level meter
Specified value	–46dB or more

Confirmation Method:

1) Connect both L and R channels of audio line input to the GND.
2) Start recording.
3) Play the recorded part to confirm that the noise is below -46dB.

Hookup 5

Pages 22 to 24

DSS (Digital Satellite System) receiver

Recommended use

Use this hookup if you have a DSS receiver. It allows the VCR's cable box control feature to control the channel on the DSS receiver, simplifying the recording process. A list of compatible DSS receivers is on page 38.

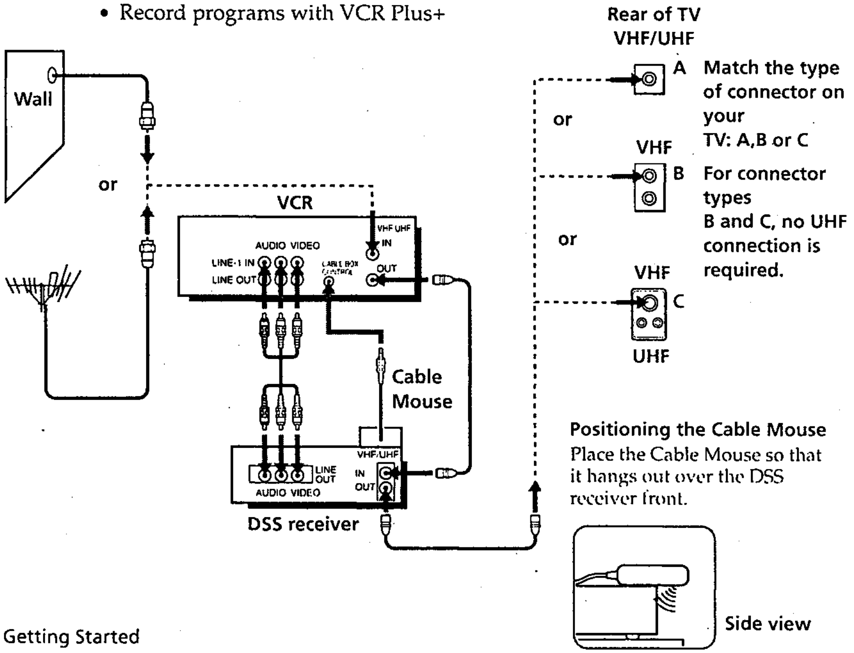
DSS (Digital Satellite System) is a satellite broadcast that provides superior digital-quality video and crisp digital-quality audio. A variety of program packages are available through your program providers. It also has program guides that are sorted by program categories.

What you can do with this hookup

- Record any channels using the VCR's cable box control feature to select channels on the DSS receiver.

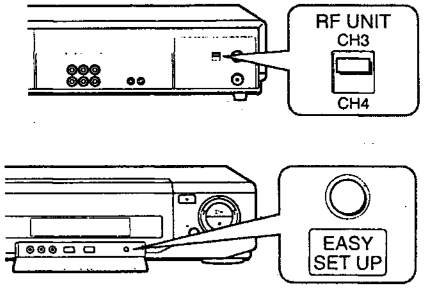
What you can't do

- Record with the DSS receiver turned off
- Record any channels from cable or an antenna
  (To record channels from cable or an antenna, turn off the cable box control feature.)
- Use a cable box
- Record programs with VCR Plus+


Rear of TV
VHF/UHF
A
or
VHF
B
or
VHF
C
UHF
Match the type of connector on your TV: A,B or C
For connector types B and C, no UHF connection is required.
Wall
or
VCR
AUDIO VIDEO
LINE-1 IN
LINE OUT
VHF UHF
IN
OUT
CABLE BOX CONTROL
Cable Mouse
VHF/UHF
LINE OUT
IN
OUT
AUDIO VIDEO
DSS receiver
Side view

Positioning the Cable Mouse
Place the Cable Mouse so that it hangs out over the DSS receiver front.

Hookup 5: VCR setup


RF UNIT
CH3
CH4
EASY SET UP

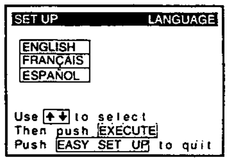
1 Set the RF UNIT switch to CH 3 or CH4, whichever channel is not used in your area. If both are used, set the switch to either channel.

For details, see page 72.
If you made A/V connections (from page 8), you can skip this step.

2 Turn on your DSS receiver.

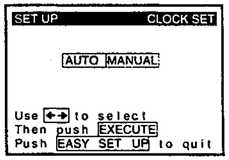
3 Press EASY SET UP on the VCR.

❶ The LANGUAGE menu appears. Change the on-screen display language to French (FRANÇAIS) or Spanish (ESPAÑOL) if desired, and press EXECUTE.
For details, see page 29.



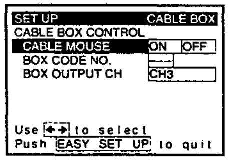
SET UP LANGUAGE
ENGLISH
FRANÇAIS
ESPAÑOL
Use ↑↓ to select
Then push EXECUTE
Push EASY SET UP to quit

❷ The CLOCK SET menu appears. Select AUTO and press EXECUTE. For details, see page 30.



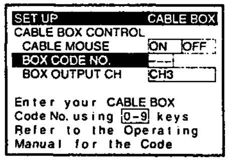
SET UP CLOCK SET
AUTO MANUAL
Use ←→ to select
Then push EXECUTE
Push EASY SET UP to quit

❸ The CABLE BOX CONTROL menu appears. Select ON. For details, see page 36.



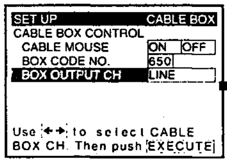
SET UP CABLE BOX
CABLE BOX CONTROL
CABLE MOUSE ON OFF
BOX CODE NO. ---
BOX OUTPUT CH CH3
Use ←→ to select
Push EASY SET UP to quit

❹ Enter your DSS receiver code number and press CURSOR↓.
For details, see page 36.

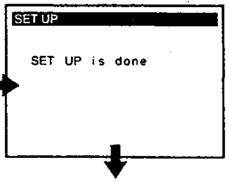


SET UP CABLE BOX
CABLE BOX CONTROL
CABLE MOUSE ON OFF
BOX CODE NO. ---
BOX OUTPUT CH CH3
Enter your CABLE BOX Code No. using 0-9 keys
Refer to the Operating Manual for the Code

❺ Set your DSS receiver output channel (BOX OUTPUT CH) to LINE and press EXECUTE.



SET UP CABLE BOX
CABLE BOX CONTROL
CABLE MOUSE ON OFF
BOX CODE NO. 650
BOX OUTPUT CH LINE
Use ←→ to select CABLE BOX CH. Then push EXECUTE



SET UP
SET UP is done

Normal display

Hookup 5: VCR setup

Automatic clock setting

Once you ve set up the VCR, it automatically sets the clock the first time you turn off the VCR. After that, whenever you turn off the VCR, it checks the time and adjusts the clock, even for Daylight Saving Time. The VCR sets the clock by picking up a time signal provided by some TV channels.

If you want to use the timer to record right away, or if the channels in your area do not carry time signals, set the clock manually. For details, see pages 34-35.

Notes

To successfully record a program from the DSS receiver, proceed as follows:
- Leave the DSS receiver on all the time.
- Turn off the display (menu screen, channel number, etc.) of the DSS receiver.
- To record or receive locked channels, unlock the channel before the VCR starts recording.
- To set pay-per-view programs in the timer setting, order the pay-per-view program before the VCR starts recording.
- Some programs are copy protected. You cannot record these programs.

Hookup 6 Pages 25 to 28

Incompatible cable box with only a few scrambled channels, using an A/B switch

Recommended use

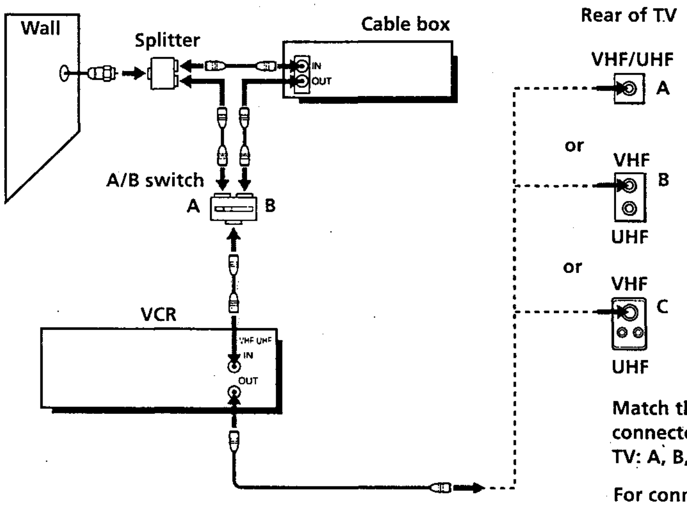
By using an A/B switch (not supplied), this hookup allows you to record both scrambled and unscrambled channels conveniently.

What you can do with this hookup

- Record any unscrambled channel by selecting the channel directly on the VCR (the A/B switch is set to A)
- Record any scrambled channel by selecting the channel on the cable box (the A/B switch is set to B)

What you can't do

- Record one scrambled channel while watching another channel (the A/B switch is set to B)



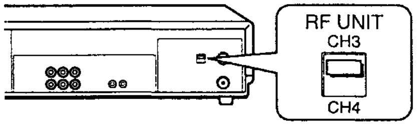
Match the type of connector on your TV: A, B, or C.

For connector types B and C, no UHF connection is required.

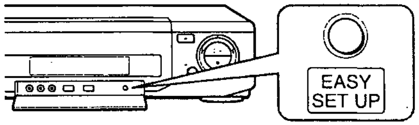
continued

Hookup 6: VCR setup

1 Set the RF UNIT switch to CH 3 or CH 4, whichever channel is not used in your area. If both are used, set the switch to either channel.



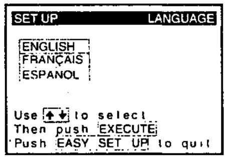
For details, see page 72. If you made A/V connections (from page 8), you can skip this step.



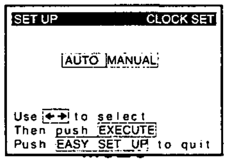
2 Set the A/B switch to "A."

3 Press EASY SET UP on the VCR.

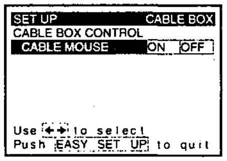
❶ The LANGUAGE menu appears. Change the on-screen display language to French (FRANÇAIS) or Spanish (ESPAÑOL) if desired, and press EXECUTE. For details, see page 29.


SET UP LANGUAGE
ENGLISH
FRANÇAIS
ESPANOL
Use ⬆⬇ to select
Then push EXECUTE
Push EASY SET UP to quit

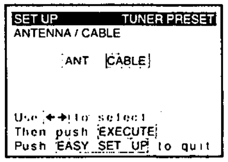
❷ The CLOCK SET menu appears. Select AUTO and press EXECUTE. For details, see page 30.


SET UP CLOCK SET
AUTO MANUAL
Use ⬅➡ to select
Then push EXECUTE
Push EASY SET UP to quit

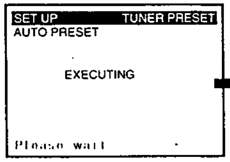
❸ The CABLE BOX CONTROL menu appears. Select OFF and press EXECUTE. For details, see page 36.

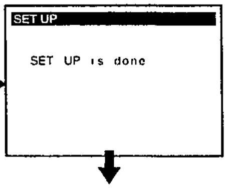

SET UP CABLE BOX
CABLE BOX CONTROL
CABLE MOUSE ON OFF
Use ⬅➡ to select
Push EASY SET UP to quit

❹ The TUNER PRESET menu appears. Set ANTENNA/CABLE to CABLE and press EXECUTE. For details, see page 41.


SET UP TUNER PRESET
ANTENNA / CABLE
ANT CABLE
Use ⬅➡ to select
Then push EXECUTE
Push EASY SET UP to quit

❺ The AUTO PRESET starts.

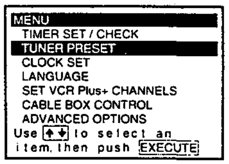

SET UP TUNER PRESET
AUTO PRESET
EXECUTING
Please wait


SET UP
SET UP is done

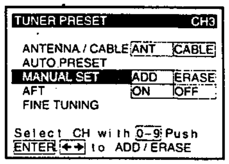
Normal display

4 Preset the cable box output channel (usually 2, 3 or 4). For details, see page 36.

❶ Press MENU and select TUNER PRESET.


MENU
TIMER SET / CHECK
TUNER PRESET
CLOCK SET
LANGUAGE
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
ADVANCED OPTIONS
Use ⬆⬇ to select an item, then push EXECUTE

❷ Enter the cable box output channel. Set MANUAL SET to ADD and press EXECUTE.


TUNER PRESET CH3
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Select CH with 0-9 Push ENTER ⬅➡ to ADD / ERASE

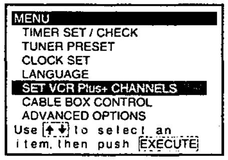
continued

Hookup 6: VCR Plus+ channel setup

1 Find the VCR Plus+ Channel Listing in your program guide. For details, see page 45.

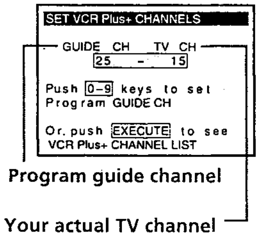
2 For unscrambled channels, if the channels in the program guide are different from the channels that you actually use on your TV, set the channels that are different as follows. For details, see page 46.

❶ Press MENU and select SET VCR Plus+ CHANNELS.


MENU
TIMER SET / CHECK
TUNER PRESET
CLOCK SET
LANGUAGE
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
ADVANCED OPTIONS
Use ↑↓ to select an item, then push EXECUTE

❷ Enter the program guide channel, then the channel you use on your TV.

❸ Press EXECUTE.

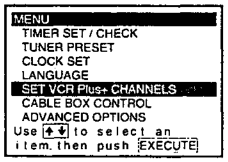

SET VCR Plus+ CHANNELS
GUIDE CH TV CH
25 - 15
Push 0–9 keys to set Program GUIDE CH
Or, push EXECUTE to see VCR Plus+ CHANNEL LIST

Program guide channel

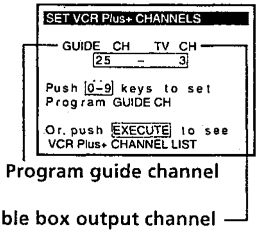
Your actual TV channel

3 For scrambled channels, enter all the scambled channels you want to record and the cable box output channel (usually 2, 3, or 4). For details, see page 46.

❶ Press MENU and select SET VCR Plus+ CHANNELS.


MENU
TIMER SET / CHECK
TUNER PRESET
CLOCK SET
LANGUAGE
SET VCR Plus+ CHANNELS
CABLE BOX CONTROL
ADVANCED OPTIONS
Use ↑↓ to select an item, then push EXECUTE

❷ Enter the program guide channel, then the cable box output channel.

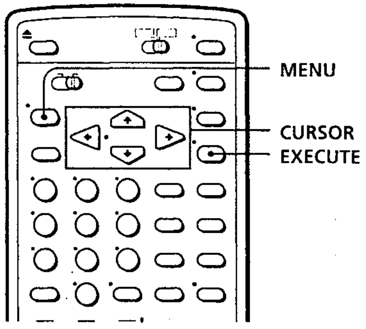

SET VCR Plus+ CHANNELS
GUIDE CH TV CH
25 - 3
Push 0–9 keys to set Program GUIDE CH
Or, push EXECUTE to see VCR Plus+ CHANNEL LIST

Program guide channel

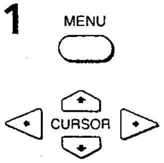
Cable box output channel

Selecting a language

If you prefer French or Spanish to English, you can change the on-screen display language.

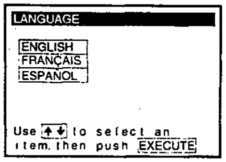


1

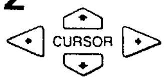


Press MENU, then press CURSOR ↑/↓ to move the cursor (▮) to LANGUAGE and press EXECUTE.

When using the EASY SET UP procedure, skip this step.

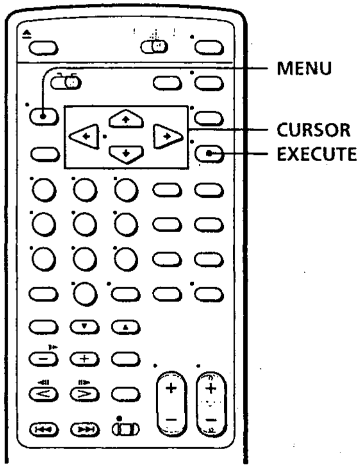

LANGUAGE
ENGLISH
FRANÇAIS
ESPAÑOL
Use ↑↓ to select an item, then push EXECUTE

2



Press CURSOR ↑/↓ to select ENGLISH, FRANCAIS or ESPAÑOL, then press EXECUTE.

Setting the clock

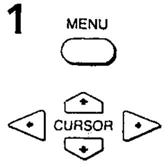


Using the Auto Clock Set feature

Some TV and cable channels transmit time signals with their broadcasts. Your VCR can pick up this time signal to automatically set the clock.

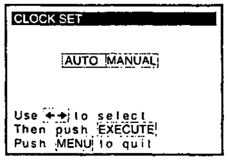
The Auto Clock Set feature works only if a channel in your area is broadcasting a time signal. If broadcasters in your area are not yet sending time signals, set the time manually (page 34).

1



Press MENU, then press CURSOR ↑/↓ to move the cursor (▮) to CLOCK SET and press EXECUTE.

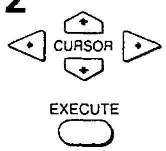
When using the EASY SET UP procedure, skip this step.


CLOCK SET

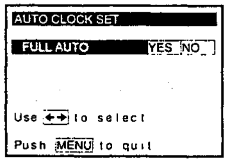
AUTO MANUAL

Use ←→ to select
Then push EXECUTE
Push MENU to quit

2



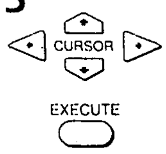
Press CURSOR ←/→ to select AUTO, then press EXECUTE.


AUTO CLOCK SET

FULL AUTO YES NO

Use ←→ to select
Push MENU to quit

3



Press CURSOR ←/→ to select YES, then press EXECUTE.

4

To activate the Auto Clock Set function, turn off the VCR.

The VCR automatically sets the clock by searching for a channel that carries a time signal and sets your time zone and Daylight Saving Time (if applicable).

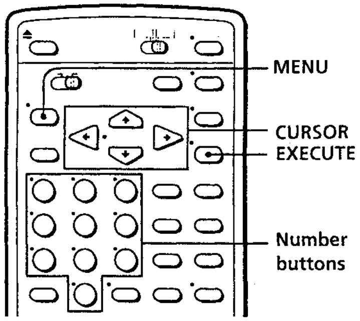
If your clock is set to the wrong time zone or Saylight Saving Time, you can adjust these settings without turning off the Auto Clock Set feature (page 32).

Notes

- The clock cannot be set automatically if you don't receive a channel that carries a time signal in your area. If so, set the clock manually.
- If there are only a few channels in your area that carry time signals, setting the clock automatically may take up to about 30 minutes. If nothing happens even after you wait about 30 minutes, set the clock manually.
- If you use Hookup 1 or Hookup 4, make sure you leave the cable box on.

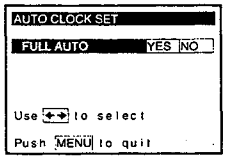
continued

If the clock is not activated

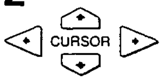


1 Follow steps 1 and 2 in "Using the Auto Clock Set feature."

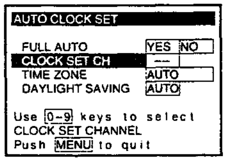
The AUTO CLOCK SET menu is displayed.


AUTO CLOCK SET
FULL AUTO YES NO
Use ◂▸ to select
Push MENU to quit

2

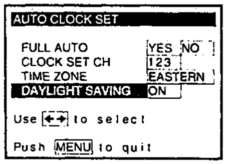


Press CURSOR ←/→ to select NO for FULL AUTO.


AUTO CLOCK SET
FULL AUTO YES NO
CLOCK SET CH – –
TIME ZONE AUTO
DAYLIGHT SAVING AUTO
Use 0–9 keys to select CLOCK SET CHANNEL
Push MENU to quit

3

Press CURSOR ↑/↓ to highlight the item you want to set, then press CURSOR ←/→ to make the setting.


AUTO CLOCK SET
FULL AUTO YES NO
CLOCK SET CH 123
TIME ZONE EASTERN
DAYLIGHT SAVING ON
Use ◂▸ to select
Push MENU to quit

- For CLOCK SET CH
  Leave the setting to "– –" to have the VCR automatically search for a channel that carries a time signal.
  Press the number buttons to select a channel that carries a time signal.
  Use this option if you know of a channel that carries a time signal. Most PBS member stations broadcast a time signal. For the fastest response, select your local PBS station.

- For TIME ZONE
  Select the time zone of your area, or select AUTO to have the VCR automatically set your time zone.
  The options are: AUTO→ATLANTIC→EASTERN → CENTRAL → MOUNTAIN → PACIFIC → ALASKA→ HAWAII → AUTO.

- For DAYLIGHT SAVING
  Select ON or OFF (standard time), or AUTO to have the VCR automatically set the daylight saving time.

4

Press EXECUTE.that carries a time signal.

5 To activate the Auto Clock Set function, turn off the VCR.

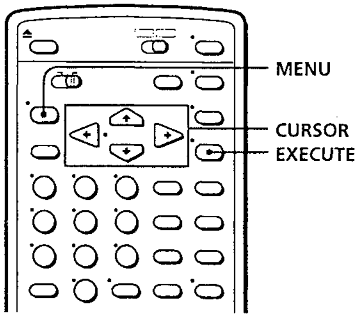
Note

- If you use both the cable box control feature and the Auto Clock Set feature, the VCR automatically changes channels on the cable box until a channel that carries a time signal is found, whenever you turn off the VCR.
  If you want to stop the search, change the channel on the cable box with the channel buttons either on the VCR or on the remote commander.

continued

Setting the clock (continued)

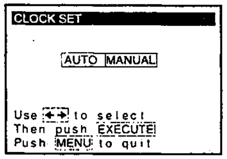
Using Manual Clock Set



1 MENU

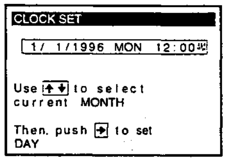
Press MENU, then press CURSOR ↑/↓ to move the cursor (▮) to CLOCK SET and press EXECUTE.

When using the EASY SET UP procedure, skip this step.


CLOCK SET
AUTO MANUAL
Use ↑↓ to select
Then push EXECUTE
Push MENU to quit

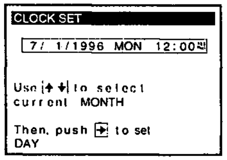
2 CURSOR

Press CURSOR ←/→ to select MANUAL, then press EXECUTE.


CLOCK SET
1/ 1/1996 MON 12:00AM
Use ↑↓ to select
current MONTH
Then, push → to set
DAY

3 CURSOR

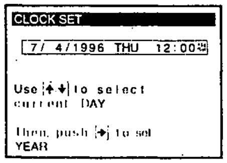
Press CURSOR ↑/↓ to set the month.


CLOCK SET
7/ 1/1996 MON 12:00AM
Use ↑↓ to select
current MONTH
Then, push → to set
DAY

4 CURSOR

Press CURSOR → to highlight the day and press CURSOR ↑/↓ to set the day.

The day of the week is set automatically.


CLOCK SET
7/ 4/1996 THU 12:00AM
Use ↑↓ to select
current DAY
Then, push → to set
YEAR

5 CURSOR

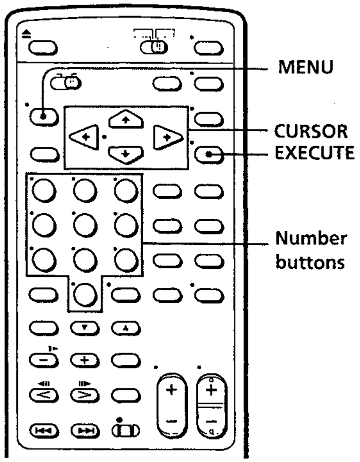
Set the year, hour and minutes in the same way as the day.

6 EXECUTE

Press EXECUTE to start the clock.

Setting up cable box control

(Skip this section if you are using Hookup 2, 3, 4 or 6.)



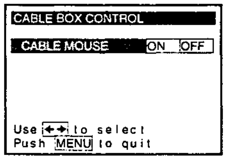
Your VCR includes a cable box control feature that allows the VCR to control most brands of cable boxes/DSS receivers via the Cable Mouse. With cable box control, the VCR controls channels on the cable box/DSS receiver for timer recording. You can also use the VCR's remote commander to change channels on the cable box/DSS receiver whenever the cable box/DSS receiver is turned on even if the VCR is turned off. To use cable box control, you need to connect the Cable Mouse (pages 10 and 22) and set the code number and output channel.

This VCR is programmed with codes necessary to control channel selection on most brands of cable boxes at the time this VCR was manufactured. It is possible that new cable boxes may be introduced that cannot be controlled with this VCR's Cable Mouse. If you have a cable box that is incompatible with this VCR, contact your cable operator — they may be able to provide you with a compatible cable box.

1

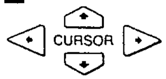
Press MENU, then press CURSOR ↑/↓ to move the cursor (▮) to CABLE BOX CONTROL and press EXECUTE.

When using the EASY SET UP procedure, skip this step.

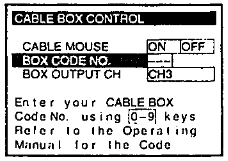


CABLE BOX CONTROL
CABLE MOUSE ON OFF
Use ↑↓ to select
Push MENU to quit

2

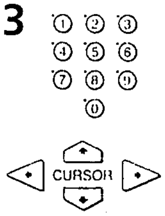


Press CURSOR ←/→ to select ON.



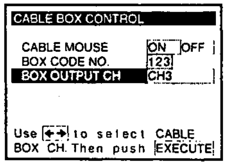
CABLE BOX CONTROL
CABLE MOUSE ON OFF
BOX CODE NO. ---
BOX OUTPUT CH CH3
Enter your CABLE BOX Code No. using 0–9 keys Refer to the Operating Manual for the Code

3



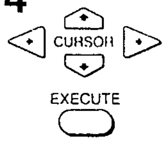
Press the number buttons to enter the cable box/DSS receiver code number, then press CURSOR ↓

Find your cable box/DSS receiver code number from the chart below.



CABLE BOX CONTROL
CABLE MOUSE ON OFF
BOX CODE NO. 123
BOX OUTPUT CH CH3
Use ←→ to select CABLE BOX CH. Then push EXECUTE

4



If you want to control a cable box, press CURSOR ←/→ to select the output channel for the cable box, then press EXECUTE.

If you want to control a DSS receiver, select LINE, then press EXECUTE.

Cable box and DSS receiver brand and the corresponding code numbers

If more than one code number is listed, try entering them one by one, until you come to the correct code for your equipment.

Cable box brand	Code numbers
ABC	018, 022, 024, 028, 217
Antronix	218
Archer	033, 050, 164, 218
BBT	278
Cable Star	067
Cabletenna	033
Cable time	172, 282, 388, 459
Century	164
Citizen	164, 326, 327
Clyde Cablevision	097
Colour Voice	036, 042
Comband	243, 244
Comtronics	051, 071
Decsat	434
Diamond	046
Eagle Comtronics	051
Eastern	013, 285
Electricord	089
Electus	055
Filmnet	454
Focus	411
Garrard	164
GC Electronics	027, 067, 341
GE	243, 244
GEC	097
Gemini	026, 068, 081, 253
General Instrument	022, 287, 487
Hamlin	020, 031, 045, 270, 284
Hitachi	022
Jasco	164, 326
Jerrold	014, 022, 025, 026, 035, 037, 058, 109, 287, 487

continued

Setting up cable box control (continued)

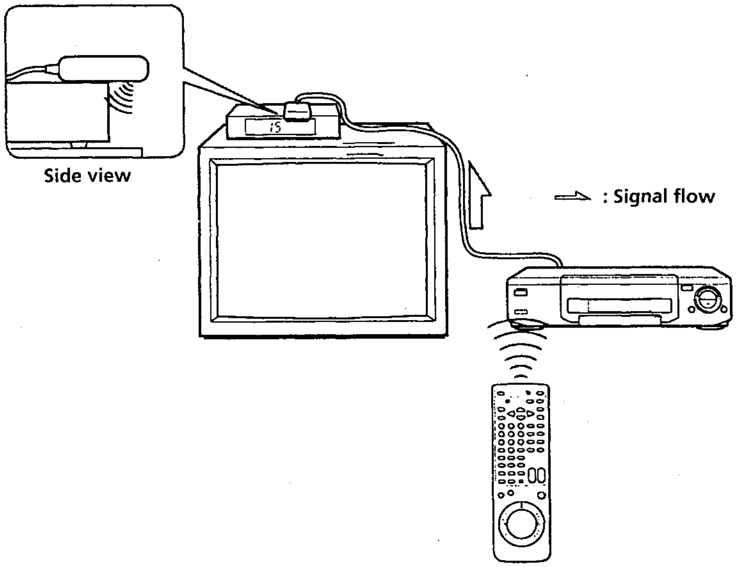
Cable box brand	Code numbers
Linsay	451
Macom	044
Magnavox	038, 043, 080, 345
Memorex	011
Movie Time	089, 167, 214
Northcoast	325
Novaplex	629
NSC	074, 081, 167, 214
Oak	018, 030, 259
Omniview	382
Panasonic	032, 118
Paragon	011
Philips	036, 038, 039, 040, 041, 042, 071, 301, 345
Philips ECG	253
Pioneer	034, 155, 271, 544
Popular Mechanics	411
Pulsar	011
RCA	032
Realistic	218
Recoton	411
Regal	031, 270, 284, 290
Regency	013
Rembrandt	081
RK	315, 317, 490
Samsung	051, 155
Satbox	386
Scientific Atlanta	017, 019, 028, 288, 338
Seam	521
Sharp	324
Signal	051
Signature	022
SL Marx	051
Spectravision	069
Sprucer	032, 318
Standard Components	107, 166
Starcom	014, 026, 058, 109

Cable box brand	Code numbers
Stargate	026, 051
STS	167
Sylvania	012
T-Cable Teletext	116
Tandy	269
Tatung	108
Teknica	157
Tele +1	454
TeleCaption	232
Teleservice	292
Texscan	012, 107
TFC	321
Timeless	429
Tocom	023, 024, 070
Toshiba	011
Tudi	297
TV86	074
TV COM	018, 030, 259
Uniden	236
Unika	033, 164, 218
United Artists	018
United Cable	014
Universal	033, 050, 067, 088, 089, 164, 202, 218, 333
Videoway	261
Vidtech	255
Viewstar	038, 071, 074, 122, 222, 269, 300
Westminster cable	116
Zenith	011, 065, 536
Zentek	411
Wave Master	576

DSS receiver brand	Code numbers
Sony	650
RCA	577

To ensure correct operation

- Place the Cable Mouse so that it hangs out over the cable box/DSS receiver front.
- Do not place the cable box/DSS receiver on top of the VCR.
- Position the cable box/DSS receiver away from the VCR.
- Point the remote commander at the VCR, not at the cable box/DSS receiver.



To check the cable box control setting

1. Press CH +/– on the remote commander. Does the channel indicator on the cable box/DSS receiver change? (Point the remote commander at the VCR, not at the cable box/DSS receiver.)
2. Press all 10 number buttons (0 to 9) on the remote commander. Does the channel indicator on the cable box/DSS receiver change?

If the answer to both 1 and 2 is "yes," you have made the correct setting.

continued

Setting up cable box control (continued)

If you cannot get your VCR to control the cable box/DSS receiver

- Check that the Cable Mouse is connected to the CABLE BOX CONTROL jack on the VCR.
- Check the position of the Cable Mouse.
- Place the cable box/DSS receiver and VCR away from each other. Do not place the cable box/DSS receiver on top of the VCR.
- Try the setup again making sure to use the correct control code. If the cable box still does not respond, try the other codes that are listed.

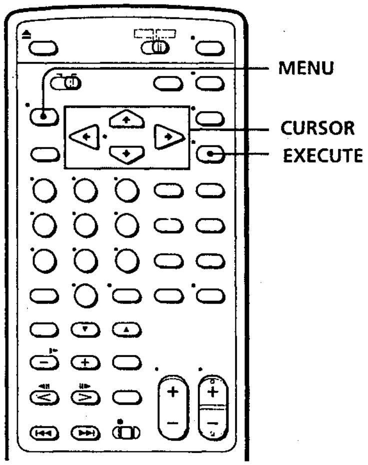
If your cable box still does not operate with the Cable Mouse, contact your cable company to see if they can provide you with a compatible cable box.

Note

- Make sure you turn off the VCR when you plug in or unplug the Cable Mouse. If you unplug the Cable Mouse and plug it in again, turn on the VCR before you use the cable box/DSS receiver control feature.

Presetting channels

(Skip this section if you are using cable box/DSS receiver control.)



This VCR is capable of receiving VHF channels 2 to 13, UHF channels 14 to 69 and unscrambled CATV channels 1 to 125. First, we recommend that you preset the receivable channels in your area using automatic presetting. Then, if there are any unwanted channels, disable them manually. If you have decided which channels you wish to preset, set them directly using manual presetting.

Before you start…

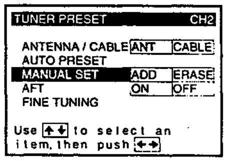
- Turn on the VCR and the TV.
- Set the TV to the VCR channel (channel 3 or 4). If your TV is connected to the VCR using A/V connections, set the TV to video input.
- Press TV/VTR to display the VTR indicator in the VCR's display window.
- Press INPUT SELECT so that a channel number appears in the VCR's display window.

Presetting all receivable channels automatically

1 MENU

Press MENU, then press CURSOR ↑/↓ to move the cursor (▮) to TUNER PRESET and press EXECUTE.

When using the EASY SET UP procedure, skip this step.



TUNER PRESET CH2
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Use ↑↓ to select an item, then push ←→

continued

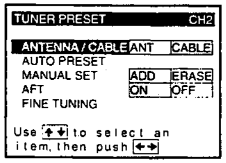
Presetting channels (continued)

2

CURSOR

- To preset cable TV channels:

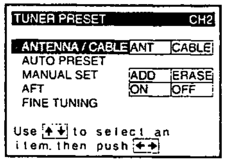
Press CURSOR ←/→ to set ANTENNA/CABLE to CABLE.


TUNER PRESET CH2
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Use ↑↓ to select an item, then push ←→

CURSOR

- To preset VHF and UHF channels:

Press CURSOR ←/→ to set ANTENNA/CABLE to ANT.


TUNER PRESET CH2
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Use ↑↓ to select an item, then push ←→

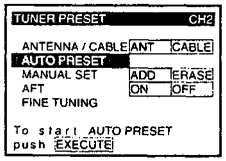
3

CURSOR

EXECUTE

Press CURSOR ↑/↓ to select AUTO PRESET then press EXECUTE.

All receivable channels are preset in numerical sequence. When no more receivable channels can be found, presetting stops and the picture from the lowest numbered channel is displayed on the TV screen.


TUNER PRESET CH2
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
To start AUTO PRESET push EXECUTE

Tip

- When receiving a VHF, UHF or CATV channel, the display changes as follows each time you press the DISPLAY button.

Channel number, program name, and station's call letters (if the broadcaster sends those services)

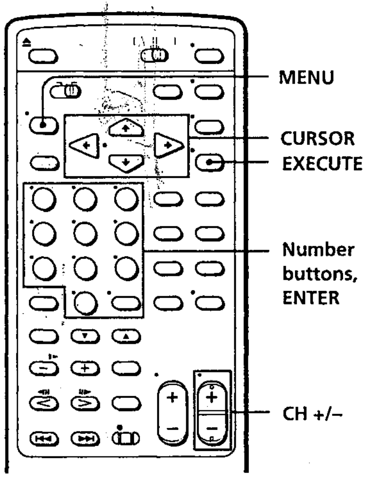
↓

Remaining tape length, and time counter

↓

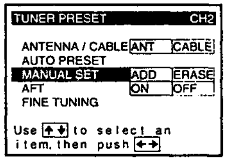
No display

Presetting/disabling channels manually



1 MENU

Press MENU and select TUNER PRESET.

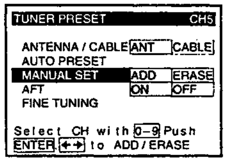

TUNER PRESET CH2
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Use ↑↓ to select an item, then push ←→

2 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪

ENTER

- To preset a channel:

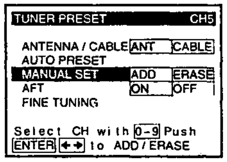
1 Press the number buttons to enter the channel number, then press ENTER.
2 Press CURSOR ←/→ to set MANUAL SET to ADD.


TUNER PRESET CH5
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Select CH with 0–9 Push ENTER ←→ to ADD / ERASE

•CH

- To disable a channel:

1 Press CH +/– to select the channel number.
2 Press CURSOR ←/→ to set MANUAL SET to ERASE.

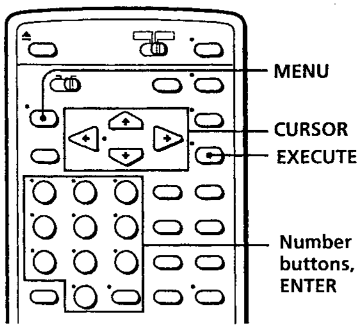

TUNER PRESET CH5
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Select CH with 0–9 Push ENTER ←→ to ADD / ERASE

3 EXECUTE

Repeat step 2 to preset or disable channels as required, then press EXECUTE.

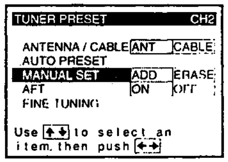
If the picture is not clear

Normally, the Auto Fine Tuning (AFT) function automatically tunes in channels clearly. If, however, the picture of a channel is not clear, you can also use the manual tuning function.



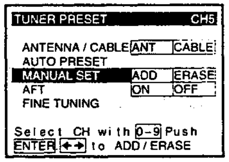
1 MENU

Press MENU and select TUNER PRESET.


TUNER PRESET CH2
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Use ↑↓ to select an item, then push ←→

2 ENTER

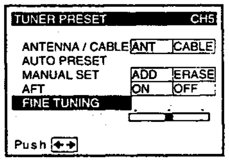
Press the number buttons to select the channel you want to fine-tune, then press ENTER.


TUNER PRESET CH5
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Select CH with 0–9 Push ENTER ←→ to ADD / ERASE

3 CURSOR

Press CURSOR ↑/↓ to select FINE TUNING.

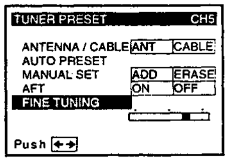
The fine tuning meter appears.


TUNER PRESET CH5
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Push ←→

4 CURSOR

Press CURSOR ←/→ to adjust to a clearer picture.

Note that the AFT setting switches to OFF.


TUNER PRESET CH5
ANTENNA / CABLE ANT CABLE
AUTO PRESET
MANUAL SET ADD ERASE
AFT ON OFF
FINE TUNING
Push ←→

Setting up VCR Plus+

How VCR Plus+ works

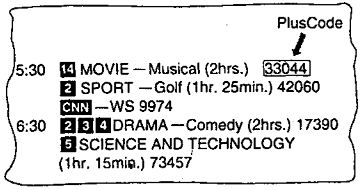
Whenever you want to record a TV program, all you need to do is look up the program's "PlusCode," a number assigned to each program that's published in the TV section of most newspapers, cable TV listings, and even *TV GUIDE* magazine. Then, just enter the PlusCode of the program you want and the VCR is automatically programmed to record that show. It's that simple.

How to set up your VCR

Setting up your VCR involves coordinating the TV channel number (the number you turn to on your TV or VCR to watch a program) with the guide channel (the number that's assigned to that channel in your program guide). To get the guide channel numbers, find the "Channel Line-up Chart" in the program guide for your area that features VCR PlusCodes. It usually looks like the example to the right.

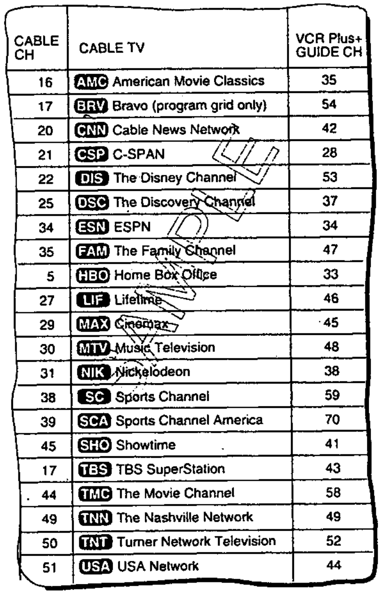
For each channel your VCR receives, use the Channel Line-up Chart to check that the channel numbers match. For example, if HBO is listed in the Channel Line-up Chart on channel 33, and your VCR receives HBO on channel 5, you need to coordinate these numbers using the following procedure. For channels in which the numbers are the same, you can skip this procedure.

Example of "PlusCode"

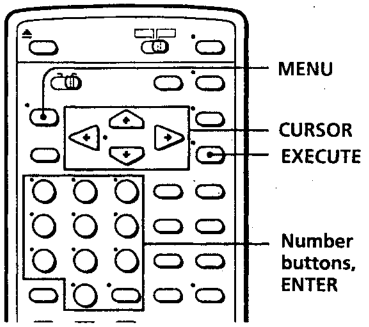


5:30 14 MOVIE — Musical (2hrs.) 33044
2 SPORT — Golf (1hr. 25min.) 42060
CNN — WS 9974
6:30 2 3 4 DRAMA — Comedy (2hrs.) 17390
5 SCIENCE AND TECHNOLOGY (1hr. 15min.) 73457

Example of "Channel Line-up Chart"

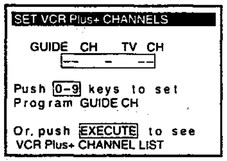


CABLE CH	CABLE TV	VCR Plus+ GUIDE CH
16	AMC American Movie Classics	35
17	BRV Bravo (program grid only)	54
20	CNN Cable News Network	42
21	CSP C-SPAN	28
22	DIS The Disney Channel	53
25	DSC The Discovery Channel	37
34	ESN ESPN	34
35	FAM The Family Channel	47
5	HBO Home Box Office	33
27	LIF Lifetime	46
29	MAX Cinemax	45
30	MTV Music Television	48
31	NIK Nickelodeon	38
38	SC Sports Channel	59
39	SCA Sports Channel America	70
45	SHO Showtime	41
17	TBS TBS SuperStation	43
44	TMC The Movie Channel	58
49	TNN The Nashville Network	49
50	TNT Turner Network Television	52
51	USA USA Network	44



1 MENU CURSOR

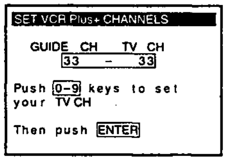
Press MENU, then press CURSOR ↑/↓ to move the cursor (▮) to SET VCR Plus+ CHANNELS and press EXECUTE.



```
SET VCR Plus+ CHANNELS
  GUIDE CH    TV CH
   --   -   --
Push 0-9 keys to set
Program GUIDE CH
Or, push EXECUTE to see
VCR Plus+ CHANNEL LIST
```

2 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪ ENTER

Enter the channel number assigned in the program guide and press ENTER.



```
SET VCR Plus+ CHANNELS
  GUIDE CH    TV CH
   33   -   33
Push 0-9 keys to set
your TV CH
Then push ENTER
```

3 ENTER

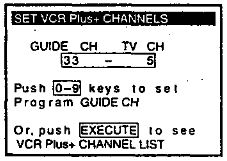
- If you made Hookup 1, 2 or 3: Enter the actual number on your TV (and VCR) and press ENTER.

ENTER

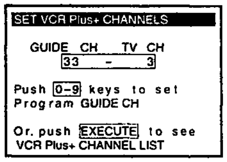
- If you made Hookup 4: Enter the cable output channel (usually 2, 3 or 4) and press ENTER.

ENTER

- If you made Hookup 6: Enter the actual number on your TV (and VCR) for an unscrambled channel and press ENTER. For a scrambled channel, enter the cable box output channel (usually 2, 3 or 4) and press ENTER.



```
SET VCR Plus+ CHANNELS
  GUIDE CH    TV CH
   33   -    5
Push 0-9 keys to set
Program GUIDE CH
Or, push EXECUTE to see
VCR Plus+ CHANNEL LIST
```



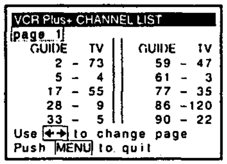
```
SET VCR Plus+ CHANNELS
  GUIDE CH    TV CH
   33   -    3
Push 0-9 keys to set
Program GUIDE CH
Or, push EXECUTE to see
VCR Plus+ CHANNEL LIST
```

4

Repeat steps 2 and 3 for each channel whose numbers don't match.

5 EXECUTE

When you have set all channels, press EXECUTE to confirm your channel settings.

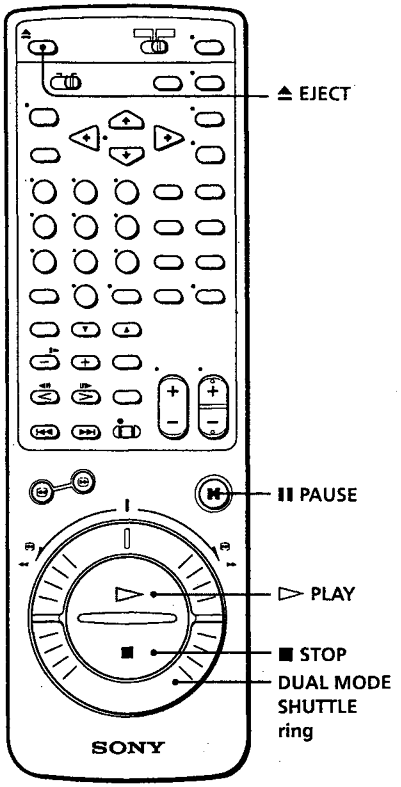


```
VCR Plus+ CHANNEL LIST
page 1
  GUIDE    TV  ||  GUIDE    TV
    2  -  73   ||   59  -  47
    5  -   4   ||   61  -   3
   17  -  55   ||   77  -  35
   28  -   9   ||   86  -120
   33  -   5   ||   90  -  22
Use ←→ to change page
Push MENU to quit
```

6 MENU

When you've finished, press MENU to exit.

Playing a tape



1 Turn on your TV and set it to the video channel.

2 Open the drop down panel and insert a tape.

The VCR turns on and starts playing automatically if you insert a tape with its safety tab removed.

3

Press ▷ PLAY.

When the tape reaches the end, it will rewind automatically.

Additional tasks

To	Press
Stop play	■ STOP
Pause play	II PAUSE
Resume play after pause	II PAUSE or ▷ PLAY
Search forward	Turn the DUAL MODE SHUTTLE (DMS) ring to ⏩ during playback
Search backward	Turn the DMS ring to ⏪ during playback
Fast-forward the tape	Turn the DMS ring to ▶▶ FF during stop
Rewind the tape	Turn the DMS ring to ◀◀ REW during stop
Eject the tape	≜ EJECT

To use the time counter

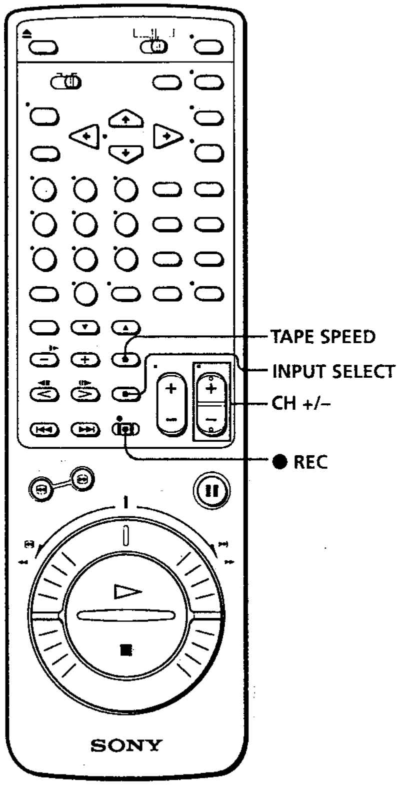
At the point on the tape that you want to find later, press COUNTER RESET. The counter in the display window resets to "0H00M00S." Search for the point afterwards by referring to the counter.

To display the counter on the TV screen, press DISPLAY.

Notes

- Tapes recorded in the LP mode on other VCRs can be played back on this VCR but the picture quality cannot be guaranteed.
- The counter resets to "0H00M00S" whenever a tape is reinserted.
- The counter stops counting when it comes to a portion with no recording.

Recording TV programs



1 Turn on your TV and set it to the video channel.

To record from a cable box, turn it on.

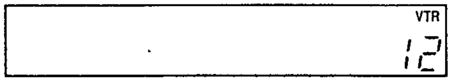
2 Insert a tape with its safty tab in place.

3 INPUT SELECT

Press INPUT SELECT until a channel number appears in the display window.

4 •CH

Press CH +/- to select the channel you want to record.



5 TAPE SPEED

Press TAPE SPEED to select the tape speed, SP or EP.

EP provides recording time three times as long as SP, however, SP produces better picture quality.

6 ●REC

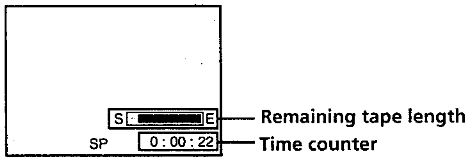
Press ●REC to start recording.

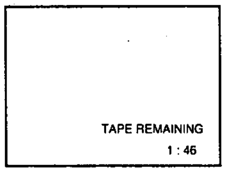
To stop recording

Press ■ STOP.

To check the remaining tape length

Press DISPLAY. The white bar indicates the approximate length of tape remaining. With the display on, press COUNTER/REMAIN to check the remaining time. Each time you press COUNTER/REMAIN, the time counter and the remaining time appear alternately. The remaining time also appears in the display window.





To check the remaining time of a tape more than two hours long, set TAPE SELECT in the ADVANCED OPTIONS menu to "~160." (For details, see page 66.)

To watch another TV program while recording

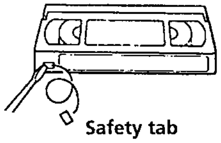
1 Press TV/VTR to turn off the VTR indicator in the display window.

2 If the TV is connected to the VCR's LINE OUT jacks, set the TV to TV input; if not, skip this step.

3 Select another channel on the TV.

To save a recording

To prevent accidental erasure, break off the safety tab as illustrated. To record on a tape again, cover the tab hole with adhesive tape.



continued

Recording TV programs (continued)

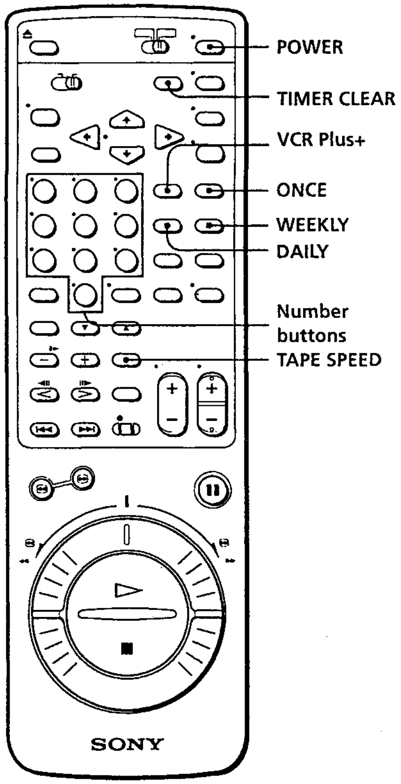
Tips

- To select a channel, you can use the number buttons on the remote commander. Enter the channel number, then press ENTER.
- The display appears on the TV screen indicating information about the tape, but the information won't be recorded on the tape.
- If you don't want to watch TV while recording, you can turn off the TV. When using a cable box, make sure to leave it on.

Notes

- The remaining time may not be indicated accurately for short tapes such as T-20 or T-30, or tapes recorded in the LP mode.
- The display does not appear during still mode or slow-motion playback.

Recording TV programs using VCR Plus+



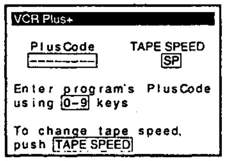
Just enter the program's PlusCode listed in the TV program guide. The date, times and channel number of that program are set automatically. You can preset up to eight programs at a time.

Before you start...

- Check that the VCR clock is set to the correct time.
- Turn on your TV and set it to the video channel. When using a cable box, turn it on.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.

1

Press VCR Plus+.



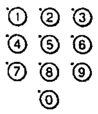
VCR Plus+

PlusCode ---------- TAPE SPEED SP

Enter program's PlusCode using 0–9 keys

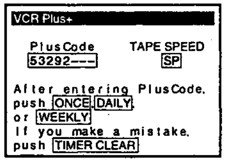
To change tape speed, push TAPE SPEED

2



Press the number buttons to enter the program's PlusCode.

If you make a mistake, press TIMER CLEAR and re-enter the correct number.



VCR Plus+

PlusCode 53292--- TAPE SPEED SP

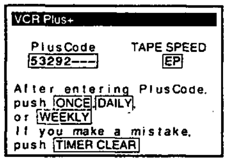
After entering PlusCode, push ONCE DAILY or WEEKLY

If you make a mistake, push TIMER CLEAR

continued

3 TAPE SPEED

Press TAPE SPEED to select SP or EP.

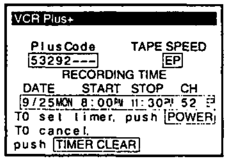


```
VCR Plus+
  PlusCode        TAPE SPEED
  53292---           EP
After entering PlusCode.
push ONCE, DAILY,
or WEEKLY
If you make a mistake.
push TIMER CLEAR
```

4 ONCE or DAILY or WEEKLY

Press ONCE, DAILY or WEEKLY:

To record	Press
Only once	ONCE
Everyday Monday to Friday	DAILY
Once a week	WEEKLY



```
VCR Plus+
  PlusCode        TAPE SPEED
  53292---           EP
        RECORDING TIME
 DATE      START  STOP   CH
 9/25MON 8:00PM 11:30PM 52
TO set timer, push POWER
TO cancel.
push TIMER CLEAR
```

The date, start and stop times, channel number and tape speed appear on the TV screen. If the information is not correct, press TIMER CLEAR to cancel the setting.

5 To enter another setting, repeat steps 1 to 4.

6 POWER

Press POWER to turn off the VCR.

The TIMER indicator on the VCR lights up and the VCR stands by for recording. When using a cable box, leave it on.

To stop recording

To stop the VCR while recording, press ■STOP.

To use the VCR after setting the timer

To use the VCR before a timer recording begins, just press POWER. The "TIMER" indicator turns off and the VCR switches on. Remember to press POWER to reset the VCR in timer recording standby after using the VCR.

You can also do the following tasks while the VCR is recording:

- Reset the counter.
- Display tape information on the TV screen.
- Check the timer settings.
- Watch another TV program.

To lock the VCR after setting the timer

Hold down POWER on the VCR until the VCR beeps. The VCR turns off and the "LOC" indicator appears on the display window. The VCR will not work except for timer recording.

To unlock the VCR, hold down POWER on the VCR until the VCR beeps.

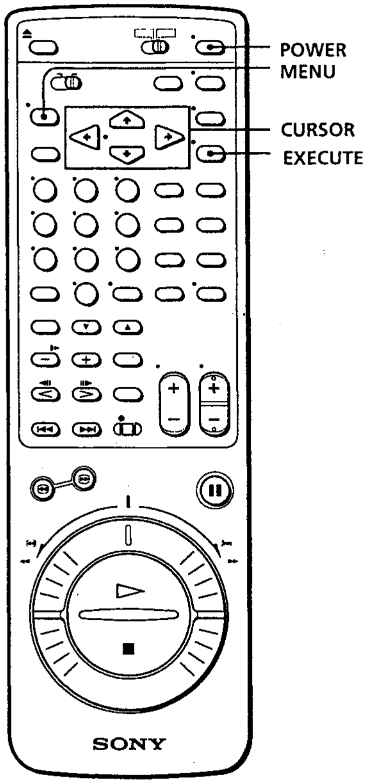
Tips

- To cancel the procedure, press VCR Plus+ before pressing ONCE, DAILY or WEEKLY.
- When you are recording a program in the SP mode and the remaining tape becomes shorter than the recording time, the tape speed is automatically changed to the EP mode. Note that some noises will appear on the picture when the tape speed is changed. If you want to keep the tape speed, set AUTO TAPE SPEED to OFF in the ADVANCED OPTIONS menu (page 66).

Notes

- If the VCR beeps, this means that:
  - The PlusCode is incorrect.
  - ONCE, DAILY or WEEKLY was selected incorrectly. You cannot select DAILY or WEEKLY for a program that airs more than seven days ahead.
- The VCR will be unlocked when:
  - you stop timer recording by pressing ■ STOP
  - you insert a tape
  - the AC power cord is disconnected or power supply stops

Setting the timer manually



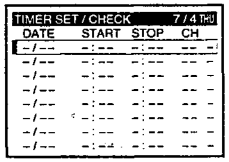
If VCR Plus+ is not available in your area, follow the instructions below to set the timer to record programs.

Before you start...

- Check that the VCR clock is set to the correct time.
- Turn on your TV and set it to the video channel. When using a cable box, turn it on.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.

1 MENU

Press MENU and select TIMER SET/CHECK.



TIMER SET / CHECK 7 / 4 THU

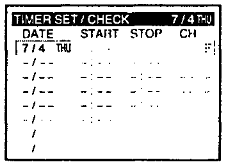
DATE	START	STOP	CH
-/--	-:--	-:--	-- -
-/--	-:--	-:--	-- -
-/--	-:--	-:--	-- -
-/--	-:--	-:--	-- -
-/--	-:--	-:--	-- -
-/--	-:--	-:--	-- -
-/--	-:--	-:--	-- -
-/--	-:--	-:--	-- -

2 CURSOR

Set the date, start and stop times, channel number and tape speed:

1 Press CURSOR ➡ to highlight each item in turn.
2 Press CURSOR ⬇/⬆ to set each item.

To correct a setting, press CURSOR ⬅ to return to that setting and reset.



TIMER SET / CHECK 7 / 4 THU

DATE START STOP CH

7 / 4 THU

To record the same program every day or the same day every week, press CURSOR ⬇. For details, see "Daily/weekly recording" on page 55.

To record from a source connected to the LINE -1 IN or LINE -2 IN jacks, press INPUT SELECT to display "L1" or "L2" in the "CH" position.

3 CURSOR

Press CURSOR ➡ to confirm the setting.

The cursor (**I**) appears at the top of the line. To enter another setting, move the cursor to the next line and repeat step 2.

4 EXECUTE

Press EXECUTE.

5 POWER

Press POWER to turn off the VCR.

The TIMER indicator on the VCR lights up and the VCR stands by for recording.

When using a cable box, leave it on.

Daily/weekly recording

In step 2 above, press CURSOR ⬇ to select the recording pattern. Each time you press CURSOR ⬇, the indication changes as shown below. Press CURSOR ⬆ to change the indication in reverse order.

the current date → SUN-SAT → MON-SAT → MON-FRI → EVERY SAT .....
→ EVERY MON → EVERY SUN → 1 month later →(cycles backward) →
the current date

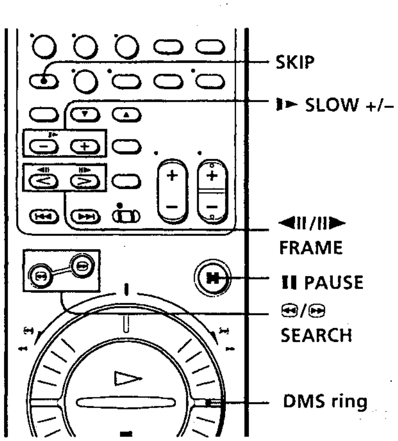
Tips

- To set the channel, you can also use the CH+/– or number buttons.
- To set the tape speed, you can also use TAPE SPEED.
- When you are recording a program in the SP mode and the remaining tape becomes shorter than the recording time, the tape speed is automatically changed to the EP mode. Note that some noises will appear on the picture when the tape speed is changed. If you want to keep the tape speed, set AUTO TAPE SPEED to OFF in the ADVANCED OPTIONS menu (page 66).
- To lock the VCR after setting the timer, see page 54.

Note

- If you are using cable box control, you cannot select "L1" or "L2."

Playing/searching at various speeds



Playback options	Operation
Play at various speeds	During playback, turn the DMS ring and hold at the speed you want.
Fast-forward/rewind	During stop, turn the DMS ring to ►►FF or ◄◄REW and release.
View the picture during fast-forward or rewind	During fast-forward, turn the DMS ring to ►►FF. During rewind, turn the DMS ring to ◄◄REW.
Play at twice the normal speed	During playback, turn the DMS ring to ×2.
Play at high speed	During playback or pause, press ⏪SEARCH or ⏩SEARCH. To change direction, press II►FRAME or ◄IIFRAME.
Play in slow motion	During playback or pause, press ▮►SLOW+/–. Press the +/– buttons to change the speed. To change direction, press II►FRAME or ◄IIFRAME.
Play frame by frame	During pause, press II►FRAME or ◄IIFRAME. Hold the button down to play one frame each second.
Play in reverse	During playback, press ◄IIFRAME.
Skip a scene	During playback, press SKIP. Pressing once skips about 30 seconds.
Rewind and start play	During stop, press ▷PLAY on the VCR while holding the DMS ring on the VCR at the ◄◄REW position.

To resume normal playback

Press ▷PLAY.

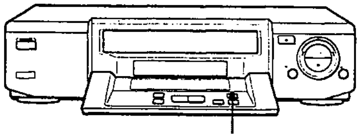
Tip

- Adjust the picture using the ▼/▲ TRACKING/STILL ADJUST buttons if:
  - Streaks appear while playing in slow motion.
  - Bands appear at the top or bottom while pausing.
  - The picture shakes while pausing.

Notes

- The sound is muted during these operations.
- Tapes recorded in the LP mode on other VCRs can be played back on this VCR but the picture quality cannot be guaranteed.

Recording TV programs using the quick timer



After starting recording in the normal way, you can have the VCR stop recording automatically after a specified duration.

1 While recording, press QUICK TIMER once.

2 Press QUICK TIMER repeatedly to set the duration.

Each press advances the time in increments of 30 minutes.

→ 0:00 → 0:30 → 1:00 ----→ 10:30 → 11:00 ┐

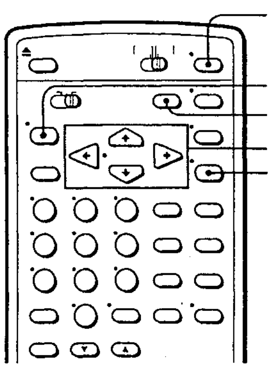
To check or extend the duration

Press QUICK TIMER once. The duration is displayed for 10 seconds. If you want to extend the time, press QUICK TIMER within 10 seconds to set to the new duration.

To stop while recording

Press ■STOP.

Checking/ changing/ cancelling timer settings



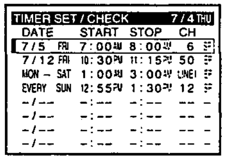
Before you start...

- Turn on your TV and set it to the video channel.

1 Press POWER to turn on the VCR.

2 Press MENU and select TIMER SET/CHECK:

- If you want to change a setting, go on to the next step.
- If you do not need to change the settings, press EXECUTE, then turn off the VCR to return to recording standby.



TIMER SET / CHECK				7 / 4 THU
DATE	START	STOP	CH	
7 / 5 FRI	7 : 00AM	8 : 00AM	6	SP
7 / 12 FRI	10 : 30PM	11 : 15PM	50	SP
MON – SAT	1 : 00AM	3 : 00AM	LINE1	SP
EVERY SUN	12 : 55PM	1 : 30PM	12	SP
– / – –	– : – –	– : – –	– –	–
– / – –	– : – –	– : – –	– –	–
– / – –	– : – –	– : – –	– –	–
– / – –	– : – –	– : – –	– –	–

3 Press CURSOR ↓/↑ to select the setting you want to change:

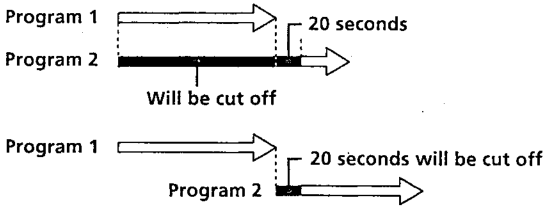
- To change the setting, press CURSOR ←/→ to highlight the item you want to change, and press CURSOR ↓/↑ to reset it. Then, press CURSOR→ repeatedly until the cursor (▌) appears at the top of the line.
- To cancel the setting, press TIMER CLEAR.

4 Press EXECUTE.

If any timer settings remain, turn off the VCR to return to recording standby.

When the timer settings overlap

The program that starts first has priority and the second program starts recording only after the first program has finished. If the programs start at the same time, the program listed first in the menu has priority.



Recording stereo and bilingual programs

Recording stereo programs

This VCR automatically receives and records stereo programs. When a stereo program is received, the STEREO indicator lights up. If there is noise in the stereo program, set AUTO STEREO in the ADVANCED OPTIONS menu to OFF. The sound will be recorded in monaural (on both hi-fi and normal audio tracks) but with less noise. For details, see page 66.

Recording bilingual programs

Normally, this VCR records only the main sound on both hi-fi and normal audio tracks. To record SAP (Second Audio Program) sound on the normal audio track, set NORMAL AUDIO in the ADVANCED OPTIONS menu to SAP (the SAP indicator lights up). For details, see page 66.

To select the bilingual sound while recording

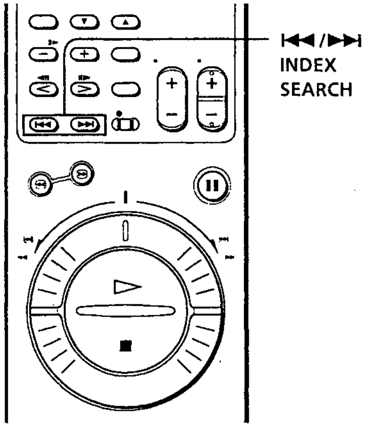
Press AUDIO MONITOR to select the sound you want.

Selecting the sound during playback

Press AUDIO MONITOR to select the sound you want.

To listen to	On-screen display	Display window
Stereo/main (left and right channels)	STEREO	STEREO
Left channel only	LEFT CH	STEREO
Right channel only	RIGHT CH	STEREO
Monaural (SAP)	No indicator	No indicator

Searching using the index function

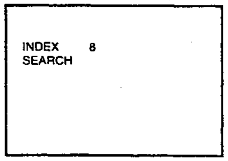


The VCR marks the tape with an index signal at the point where each recording begins. Use these signals as references to find a specific recording. The VCR can search up to 99 index signals ahead of or behind the current position.

1 Insert an indexed tape into the VCR.

2 Press ⏮/⏭INDEX SEARCH repeatedly to specify how many index signals ahead or behind you want to search:

- To search ahead, press ⏭INDEX SEARCH.
- To search backwards, press ⏮INDEX SEARCH.



The VCR starts searching and the index number on the TV screen counts down to zero. Playback starts automatically from that point.

To stop searching

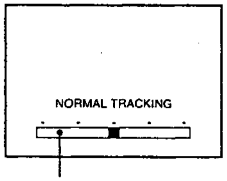
Press ■STOP.

Adjusting the picture

Adjusting the tracking

Although the VCR automatically adjusts the tracking when playing a tape (the AUTO TRACKING indicator flashes in the display window, then lights steadily), distortion may occur if the tape was recorded in poor condition. If so, manually adjust the tracking.

Press the ▼/▲TRACKING NORMAL/SLOW buttons to display the tracking meter. The distortion should disappear as you press one of the two buttons. If you cannot get a clear picture with manual adjustment, press TRACKING AUTO/MANUAL to return to automatic adjustment.



Tracking meter

About Adaptive Picture Control (APC)

Adaptive Picture Control (APC) automatically improves recording and playback quality by adjusting the VCR to the condition of the video heads and tape. To maintain better picture quality, we recommend that you set APC to ON in the ADVANCED OPTIONS menu (with the APC indicator in the display window lit).

APC playback

The APC function automatically works on all types of tapes, including rental tapes and tapes that were not recorded with APC.

APC recording

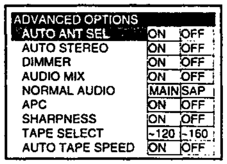
Whenever you insert a tape and first start recording, the VCR adjusts to the tape using the APC function (the APC indicator flashes rapidly). This adjustment is retained until the tape is ejected.

Notes

- Auto tracking adjustment cannot be used on tapes recorded in the LP mode on other VCRs.
- The APC function does not work if the tape speed is automatically changed from the SP to EP mode during a timer recording, unless the tape has been recorded in the EP mode with the APC function.
- There is a delay of a few seconds before the VCR actually starts recording while the VCR analyzes the tape. To avoid the delay, first set the VCR to recording pause (the APC indicator flashes slowly) and press ●REC to have the VCR analyze the tape (the APC indicator flashes rapidly). After the APC indicator stops flashing, press ❚❚PAUSE to start recording immediately.

  If you want to start recording quickly without using the APC function, first set the VCR to recording pause (the APC indicator flashes slowly) and press ❚❚PAUSE to start recording.

Changing menu options



ADVANCED OPTIONS

AUTO ANT SEL	ON	OFF
AUTO STEREO	ON	OFF
DIMMER	ON	OFF
AUDIO MIX	ON	OFF
NORMAL AUDIO	MAIN	SAP
APC	ON	OFF
SHARPNESS	ON	OFF
TAPE SELECT	-120	-160
AUTO TAPE SPEED	ON	OFF

1. Press MENU and select ADVANCED OPTIONS.
2. Press CURSOR ↑/↓ to select the option to change, then press CURSOR ←/→ to change the setting.
3. Press EXECUTE to return to the original screen.

Menu choices

Initial settings are indicated in bold print.

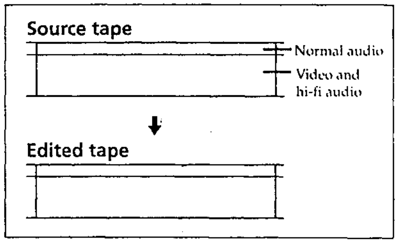
Menu option	Set this option to
AUTO ANT SEL	**ON** if your TV is connected only to VHF/UHF OUT on the VCR. To play a tape, set the TV to the VCR channel (channel 3 or 4). OFF if your TV is connected to both VHF/UHF OUT and LINE OUT on the VCR. To play a tape, set the TV to the VCR input.
AUTO STEREO	**ON** to receive stereo programs, OFF to reduce noise. The sound changes to monaural.
DIMMER	ON to make the display window dim, **OFF** to make it brighter.
AUDIO MIX	ON to listen to the sound recorded on hi-fi and normal audio tracks at the same time. The AUDIO MONITOR button will not function. **OFF** to listen to hi-fi and normal audio tracks separately. Select the sound using the AUDIO MONITOR button.
NORMAL AUDIO	**MAIN** to record the main sound on both hi-fi and normal audio tracks. SAP to record the SAP (Second Audio Program) sound on the normal audio track. The main sound is recorded on the hi-fi audio track.
APC	**ON** to switch on the APC (Adaptive Picture Control) function and improve picture quality, OFF to switch off APC.
SHARPNESS	ON to get a sharp picture, **OFF** to clear the sharpness control.
TAPE SELECT	"**~120**" or "~160" to select the tape length and display the remaining time correctly.
AUTO TAPE SPEED	**ON** to change the timer recording tape speed automatically to the EP mode when the remaining tape becomes shorter than the recording time, OFF to keep the tape speed.

Editing methods

This section introduces you to various ways to edit tape recordings.

Basic editing

You can make a copy of a tape.


Source tape
Normal audio
Video and hi-fi audio
Edited tape

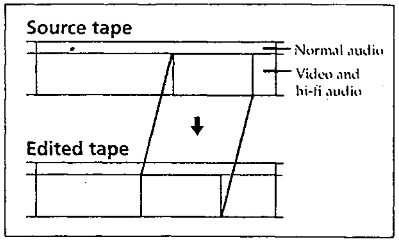
Insert editing

You can replace an existing scene with material from another recording. There are three kinds of insert editing.

Video insert

Replaces the original video and hi-fi audio. The monaural sound on the normal audio track is retained.

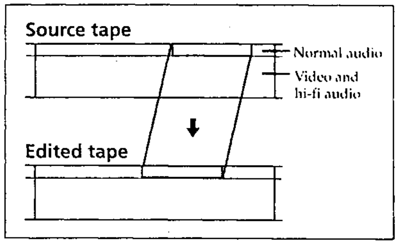
Video insert


Source tape
Normal audio
Video and hi-fi audio
Edited tape

Audio insert

Replaces the original monaural sound on the normal audio track. The video and hi-fi sound are left intact. For example, you can use this feature to add commentary to a tape recorded on a camcorder.

Audio insert

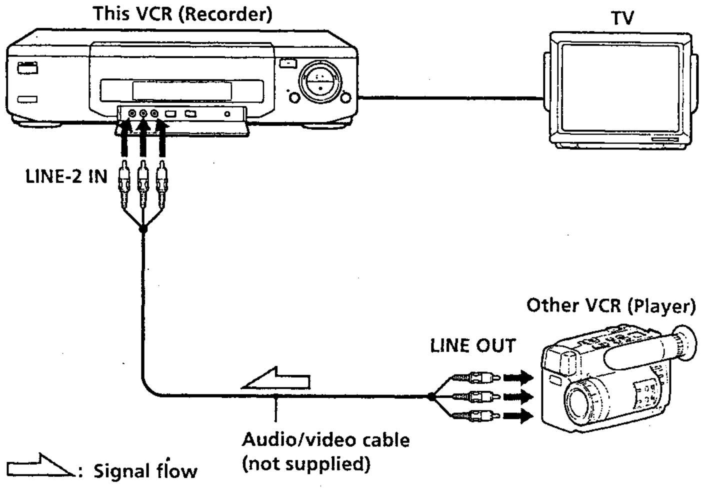

Source tape
Normal audio
Video and hi-fi audio
Edited tape

A/V insert

Replaces the original video and both hi-fi and monaural sound.

Hooking up to a VCR or stereo system

How to hook up to record on this VCR


This VCR (Recorder)
TV
LINE-2 IN
Other VCR (Player)
LINE OUT
Audio/video cable (not supplied)
: Signal flow

If the other VCR has a CONTROL S OUT jack for synchronized editing

Hook up to record on the other VCR, then connect the VCRs via the CONTROL S jacks. The CONTROL S connection lets you control (pause and release pause) both VCRs from the recording VCR.

Notes

- Make sure you connect the plugs to jacks of the same color.
- If the other VCR is a monaural type, leave the red plugs unconnected.
- If you connected this VCR to both the LINE IN and LINE OUT jacks of the other VCR, select the input correctly to prevent a humming noise.
- If the CONTROL S IN jack is used for SystemLink (A/V bus control) with a TV, the CONTROL S connection cannot be used for editing.

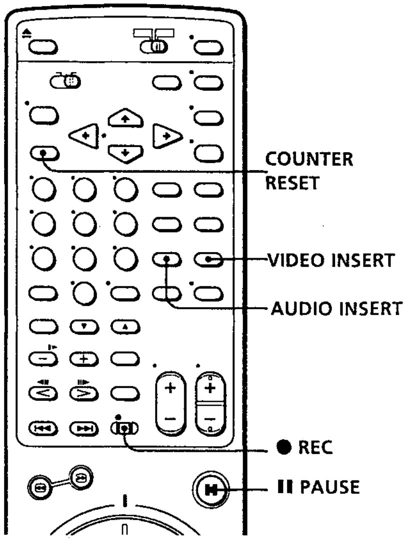
How to hook up to a stereo system

Connect LINE-2 IN AUDIO on this VCR to the audio output jacks on the stereo system, using the RK-C510KS audio cable (not supplied).

Insert editing

Before you start editing

- Turn on your TV and set it to the video channel.
- Press INPUT SELECT to display "L2" in the display window.
- Press TAPE SPEED on the remote commander to select the tape speed, SP or EP.
- On this VCR, set the EDIT switch to ON. If the other VCR has a similar switch, set it to ON as well.



1 Insert a source tape into the playback VCR or the stereo system. Search for the point to start playback and set it to playback pause.

2 Insert a prerecorded tape into this (recording) VCR. Search for the end of the scene to be replaced and press IIPAUSE.

3 Press COUNTER RESET on this VCR to reset the counter to "0H00M00S."

4 Rewind the prerecorded tape to the beginning of the scene to be replaced.

The VCR pauses.

5 Press the INSERT buttons:

To replace	Press
Picture and hi-fi sound	INSERT VIDEO "VID INSII" appears on the TV screen and "V INSERT" appears in the display window.
Monaural sound only	INSERT AUDIO "A INSERT " appears in the display window.
Picture, hi-fi and monaural sound	INSERT AUDIO, then INSERT VIDEO "A/V INSII" appears on the TV screen and "AV INSERT " appears in the display window.

6 To start editing, press the IIPAUSE buttons on this VCR and the other VCR (or stereo system) at the same time.

To stop editing

Press the ■STOP buttons on this VCR and the other VCR (or stereo system).

To listen to both the hi-fi and normal audio

Set AUDIO MIX to ON in the ADVANCED OPTIONS menu (page 66). Use this feature to listen to inserted audio together with the original hi-fi audio. When AUDIO MIX is set to ON, the AUDIO MONITOR button does not function. Remember to reset AUDIO MIX to OFF after playing the tape.

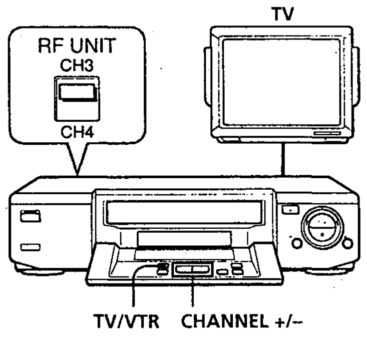
Note

- To use the INSERT function, this VCR must be set to playback pause, not recording pause.

General setup information

Setting the RF unit

When connecting the VCR to the TV using only the antenna cable, you must set the RF UNIT switch on the rear of the VCR so that the TV can receive the correct signal from the VCR.



1 Set the RF UNIT switch on the rear of the VCR to CH3 or CH4, whichever channel is not used in your area. If both are used, set the switch to either channel.

2 Press POWER to turn on the VCR.

3 Press TV/VTR to turn on the VTR indicator in the VCR's display window.

4 Press CHANNEL +/– to display a channel number in the display window. Select an active channel number in your area.

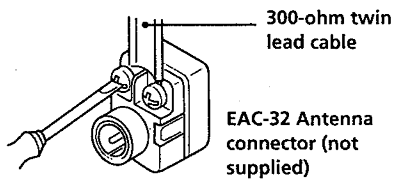
5 Turn on your TV and set it to the channel you selected in step 1 (channel 3 or 4).

The selected TV channel broadcast appears on the TV screen. If the channels change when you press CHANNEL +/– on the VTR, you have made the correct setting.

Whenever you use the VCR, set the TV to the channel selected in step 1.

Attaching the external antenna connector

When using a 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-32 antenna connector (not supplied) to connect the antenna to the VCR.



1 Loosen the screws on the antenna connector.

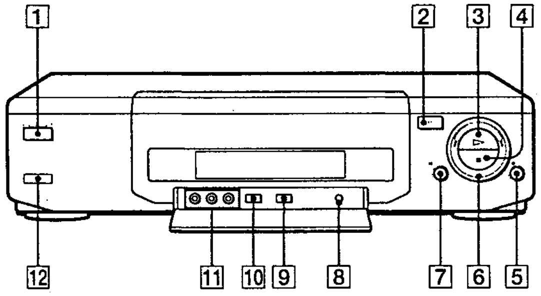
2 Wind the twin leads around the screws on the antenna connector.

3 Retighten the screws.

Index to parts and controls

Refer to the pages indicated in parentheses ( ) for details.

Front panel



1 POWER switch/indicator

2 ≜ EJECT button (49)

3 ▷ PLAY button (49)

4 ■ STOP button (49)

5 ● REC button (50)

6 DUAL MODE SHUTTLE ring (49, 58)

7 ❙❙ PAUSE button (49)

8 EASY SET UP button (11, 14, 17, 20, 23)

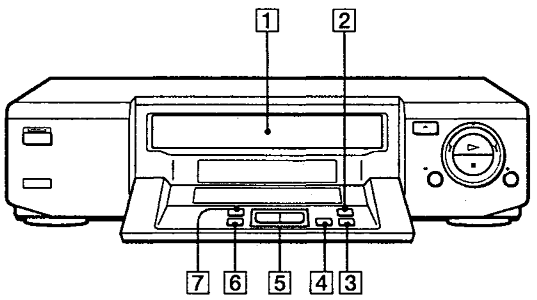
9 COMMAND MODE switch (5)

10 EDIT switch (69)

11 LINE-2 IN VIDEO/AUDIO L/R jacks (68)

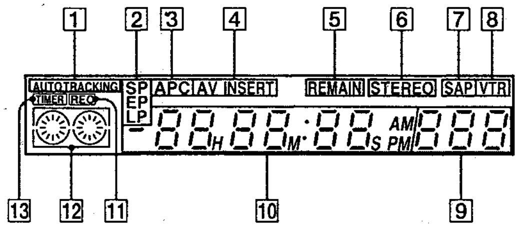
12 Remote sensor

Front panel, with cover opened



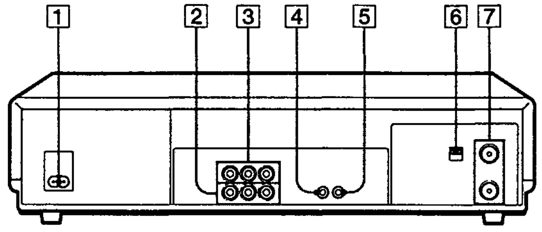
1 Tape compartment
2 QUICK TIMER button (60)
3 TAPE SPEED (SP/EP) button (51)
4 COUNTER RESET button (49)
5 CHANNEL +/– buttons (50)
6 INPUT SELECT button (50, 69)
7 TV/VTR button (51)

Display window


1
2
3
4
5
6
7
8
AUTO TRACKING
TIMER
REC
SP
EP
LP
APC
AV INSERT
REMAIN
STEREO
SAP
VTR
H
M
S
AM
PM
13
12
11
10
9

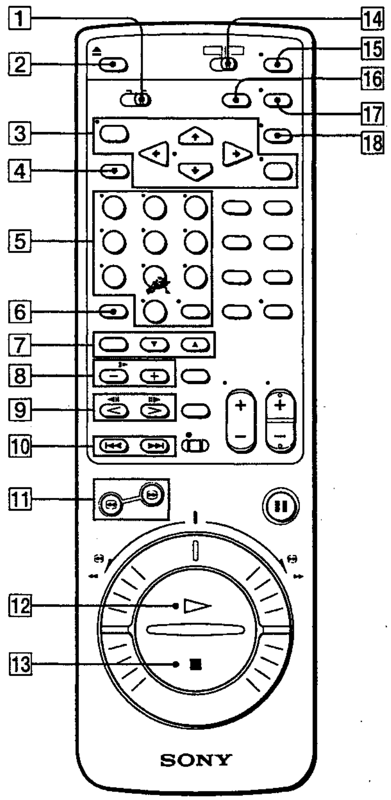
1 AUTO TRACKING indicator (65)
2 Tape speed indicator (51)
3 APC indicator (65)
4 AV INSERT indicator (70)
5 REMAIN indicator (51)
6 STEREO indicator (62)
7 SAP indicator (62)
8 VTR indicator (51)
9 Line/channel indicator (50, 69)
10 Time counter/remaining time counter/clock
11 REC indicator
12 Tape indicator
13 TIMER indicator

Rear panel



1 AC IN connector
2 LINE OUT AUDIO L/R/VIDEO jacks (8)
3 LINE-1 IN AUDIO L/R/VIDEO jacks (68)
4 SYSTEMLINK (CONTROL S IN) jack (9, 68)
5 CABLE BOX CONTROL (CONTROL S OUT) jack (10, 22)
6 RF UNIT switch (72)
7 VHF/UHF IN/OUT connectors (10, 13, 16, 19, 22, 25)

Remote commander



1 COMMAND MODE switch (5)

2 ≜ EJECT button (49)

3 Menu operation buttons (29)

MENU button
CURSOR ↑/↓/←/→ buttons
EXECUTE button

4 COUNTER RESET button (49)

5 Channel number buttons and ENTER button (43, 46)

6 SKIP button (58)

7 TRACKING buttons (65)

▼/▲ NORMAL/SLOW (STILL ADJUST) buttons
AUTO/MANUAL button

8 I► SLOW buttons (58)

9 ◄II/II► FRAME buttons (58)

10 I◄◄/►►I INDEX SEARCH buttons (64)

11 ⊖/⊕ SEARCH buttons (58)

12 ▷ PLAY button (58)

13 ■ STOP button (49)

14 TV/VTR remote control switch (5)

15 POWER button

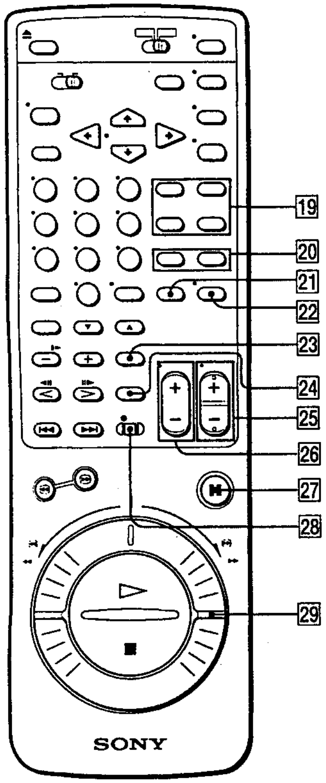
16 TIMER CLEAR button (53)

17 TV/VTR button (51)

18 AUDIO MONITOR button (62)

continued

Index to parts and controls (continued)



19 VCR Plus+ buttons (53)

VCR Plus+ button
ONCE button
DAILY button
WEEKLY button

20 AUDIO/VIDEO INSERT buttons (70)

21 COUNTER/REMAIN button (51)

22 DISPLAY button (51)

23 TAPE SPEED button (51)

24 INPUT SELECT button (50, 69)

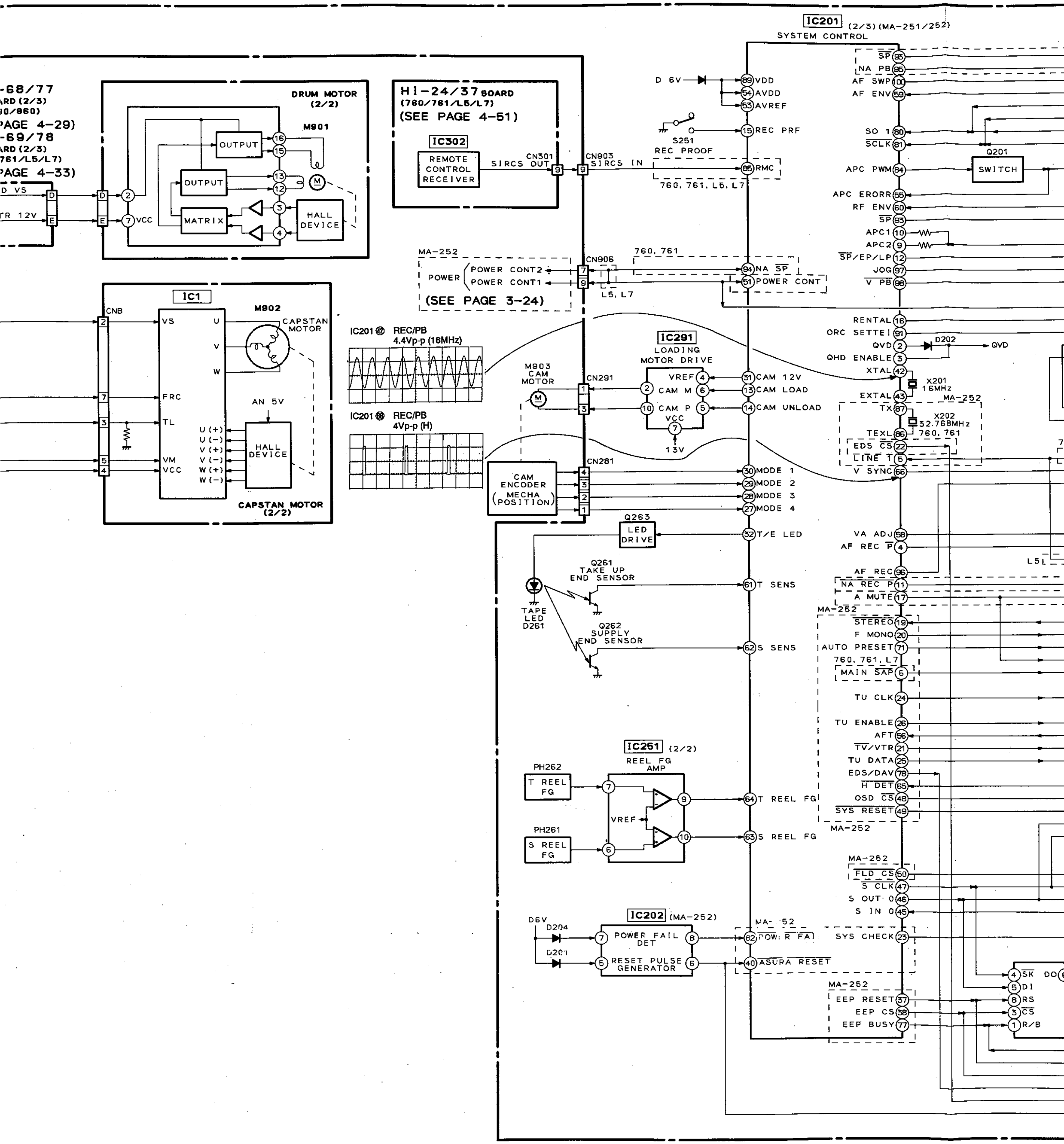
25 CH +/– buttons (50)

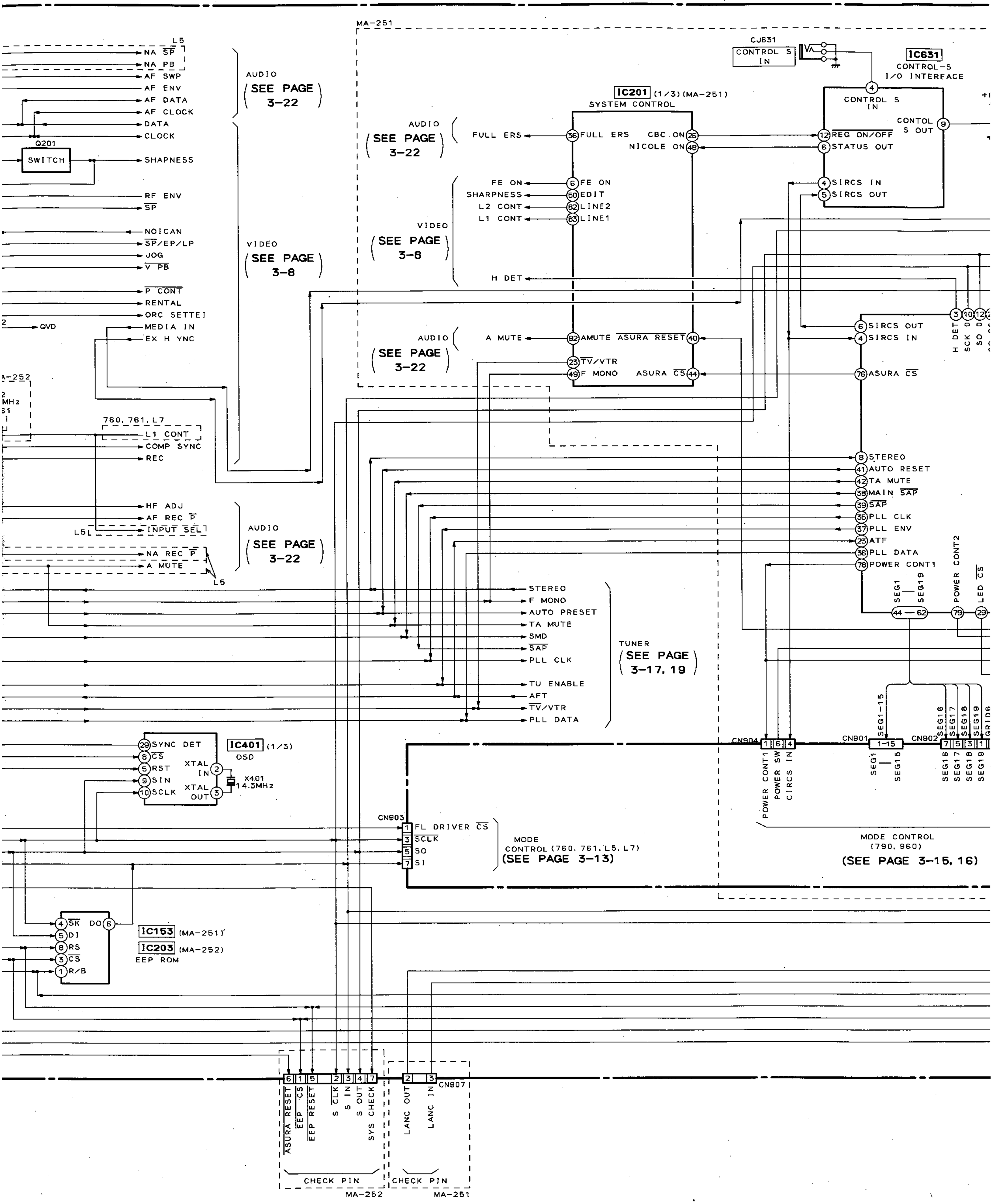
26 VOL +/– buttons (5)

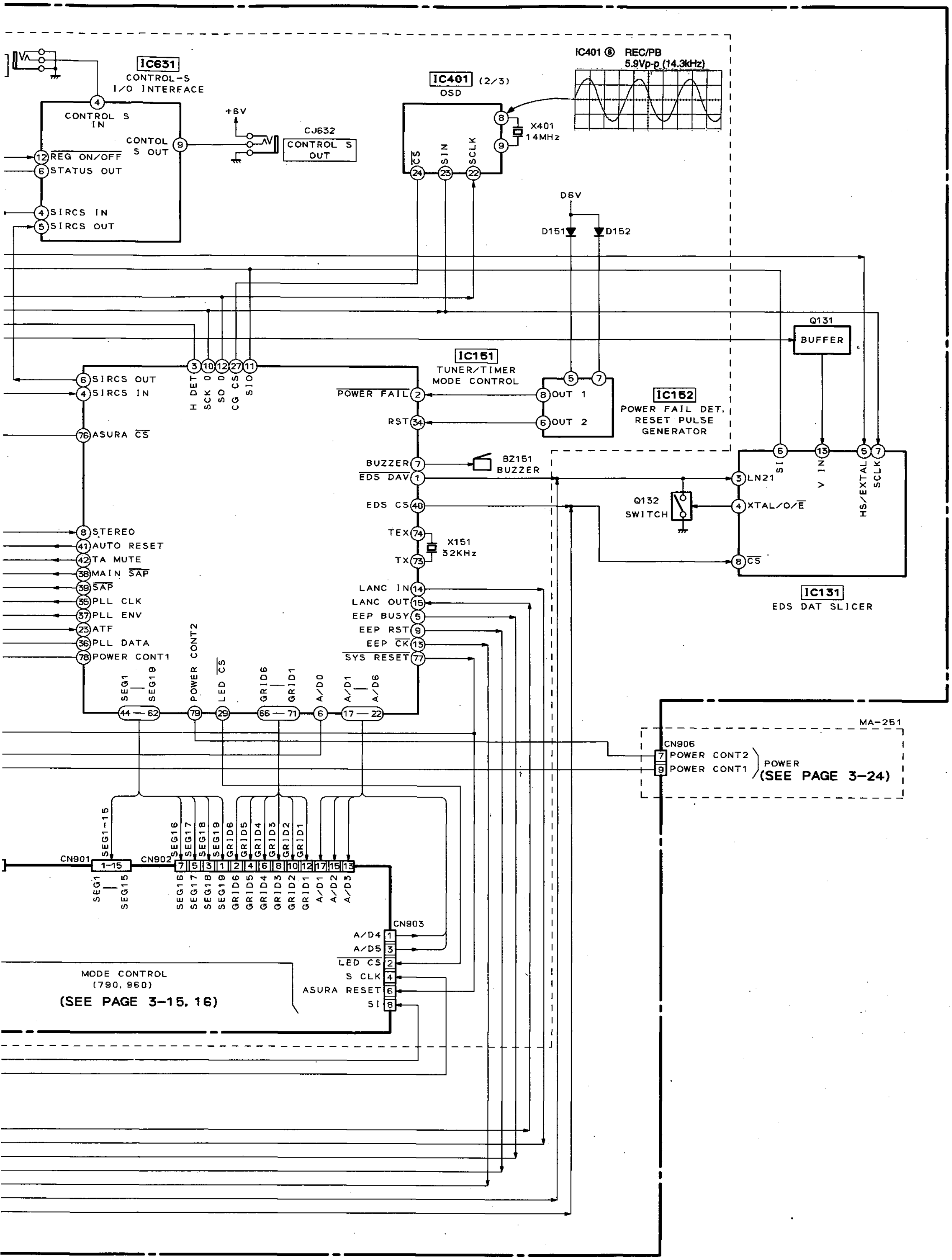
27 II PAUSE button (49)

28 ● REC button (50)

29 DUAL MODE SHUTTLE ring (49, 58)

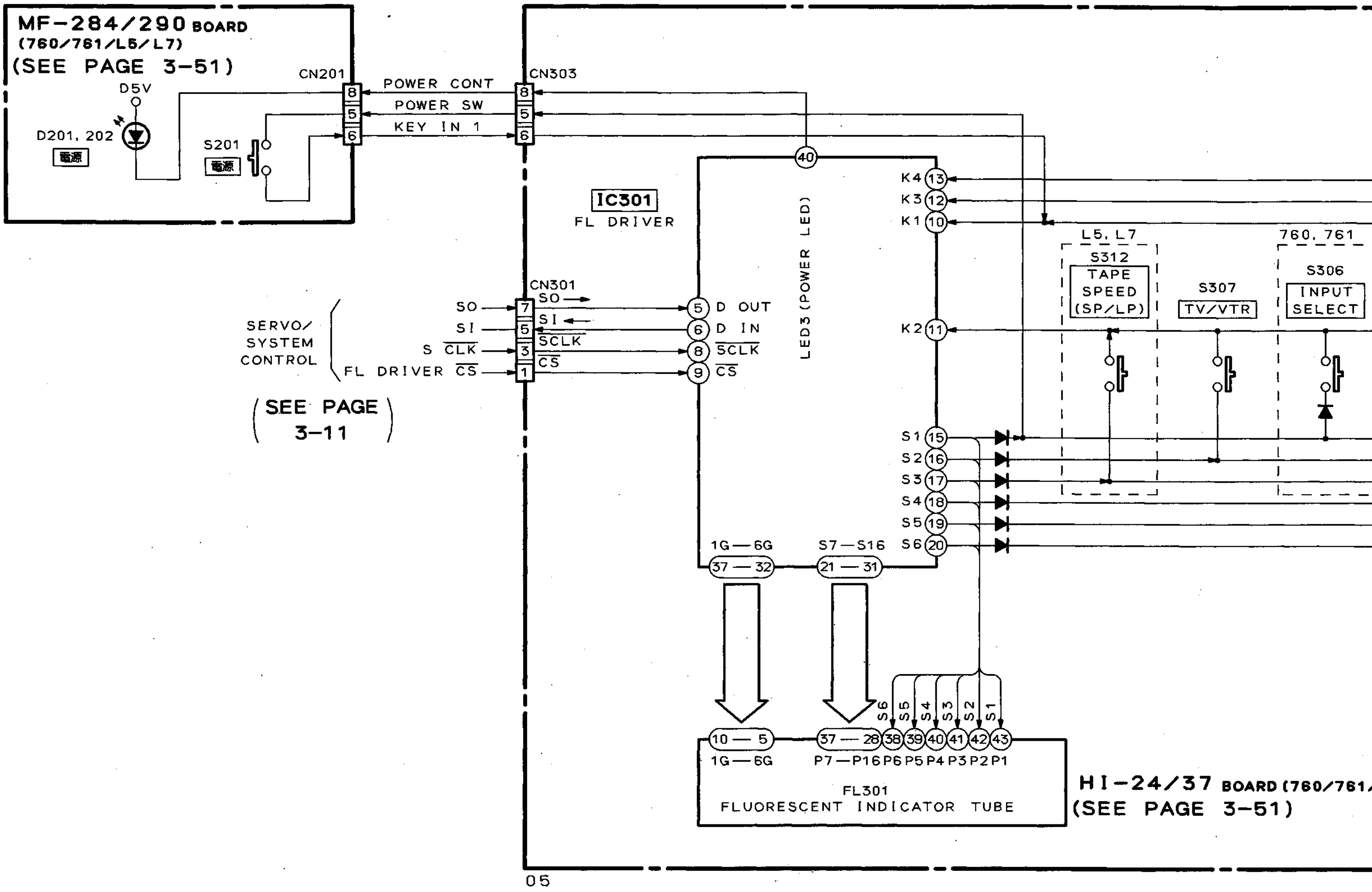

-68/77
ARD (2/3)
0/860)
PAGE 4-29)
-69/78
ARD (2/3)
761/L5/L7)
PAGE 4-33)
D VS
TR 12V
DRUM MOTOR (2/2)
M901
OUTPUT
OUTPUT
MATRIX
HALL DEVICE
VCC
HI-24/37 BOARD (760/761/L5/L7)
(SEE PAGE 4-51)
IC302
REMOTE CONTROL RECEIVER
CN301 SIRCS OUT
CN903 SIRCS IN
IC201 (2/3) (MA-251/252)
SYSTEM CONTROL
D 6V
VDD
AVDD
AVREF
S251 REC PROOF
REC PRF
RMC
760, 761, L5, L7
SP
NA PB
AF SWP
AF ENV
SO 1
SCLK
Q201 SWITCH
APC PWM
APC ERORR
RF ENV
SP
APC1
APC2
SP/EP/LP
JOG
V PB
MA-252
POWER
POWER CONT2
POWER CONT1
(SEE PAGE 3-24)
CN906
760, 761
L5, L7
NA SP
POWER CONT
IC1
CNB
M902
CAPSTAN MOTOR
VS
U
V
W
FRC
TL
VM
VCC
AN 5V
U(+) U(-) V(+) V(-) W(+) W(-)
HALL DEVICE
CAPSTAN MOTOR (2/2)
IC201 ㊷ REC/PB 4.4Vp-p (16MHz)
IC201 ㊽ REC/PB 4Vp-p (H)
RENTAL
ORC SETTEI
QVD
D202
QVD
QHD ENABLE
XTAL
X201 16MHz
EXTAL
MA-252
TX
X202 32.768MHz
760, 761
TEXL
EDS CS
LINE 1
V SYNC
IC291
LOADING MOTOR DRIVE
VREF
CAM M
CAM P
VCC
13V
M903 CAM MOTOR
CN291
CAM 12V
CAM LOAD
CAM UNLOAD
CN281
CAM ENCODER (MECHA POSITION)
MODE 1
MODE 2
MODE 3
MODE 4
Q263 LED DRIVE
T/E LED
VA ADJ
AF REC P
L5L
AF REC
NA REC P
A MUTE
MA-252
STEREO
F MONO
AUTO PRESET
760, 761, L7
MAIN SAP
TU CLK
TU ENABLE
AFT
TV/VTR
TU DATA
EDS/DAV
H DET
OSD CS
SYS RESET
MA-252
Q261 TAKE UP END SENSOR
T SENS
TAPE LED D261
Q262 SUPPLY END SENSOR
S SENS
IC251 (2/2)
REEL FG AMP
PH262
T REEL FG
PH261
S REEL FG
VREF
T REEL FG
S REEL FG
MA-252
FLD CS
S CLK
S OUT 0
S IN 0
IC202 (MA-252)
D6V
D204
D201
POWER FAIL DET
RESET PULSE GENERATOR
MA-252
POW. R FAI
ASURA RESET
SYS CHECK
MA-252
EEP RESET
EEP CS
EEP BUSY
SK
DO
DI
RS
CS
R/B

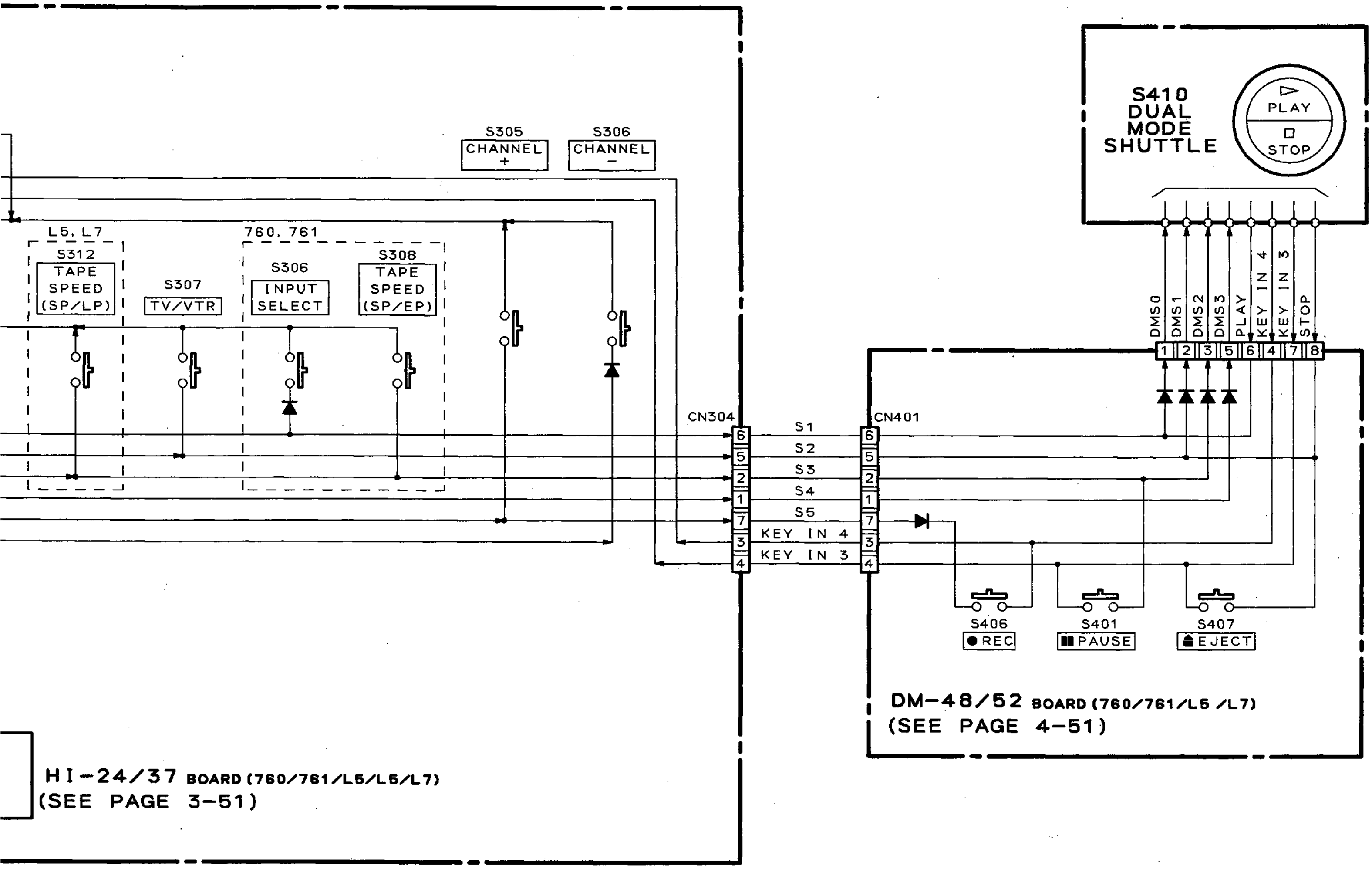

MA-251
L5
NA SP
NA PB
AF SWP
AF ENV
AF DATA
AF CLOCK
DATA
CLOCK
Q201
SWITCH
SHAPNESS
AUDIO
SEE PAGE 3-22
RF ENV
SP
NOICAN
SP/EP/LP
JOG
V PB
VIDEO
SEE PAGE 3-8
P CONT
RENTAL
ORC SETTEI
QVD
MEDIA IN
EX H YNC
A-252
MHz
760, 761, L7
L1 CONT
COMP SYNC
REC
HF ADJ
AF REC P
INPUT SEL
L5
NA REC P
A MUTE
L5
AUDIO
SEE PAGE 3-22
CJ631
CONTROL S IN
IC631
CONTROL-S I/O INTERFACE
CONTROL S IN
CONTOL S OUT
REG ON/OFF
STATUS OUT
SIRCS IN
SIRCS OUT
IC201 (1/3) (MA-251)
SYSTEM CONTROL
AUDIO
SEE PAGE 3-22
FULL ERS
FULL ERS
CBC ON
NICOLE ON
FE ON
SHARPNESS
L2 CONT
L1 CONT
FE ON
EDIT
LINE2
LINE1
VIDEO
SEE PAGE 3-8
H DET
AUDIO
SEE PAGE 3-22
A MUTE
AMUTE
ASURA RESET
TV/VTR
F MONO
ASURA CS
SIRCS OUT
SIRCS IN
ASURA CS
H DET
SCK
SO
STEREO
AUTO RESET
TA MUTE
MAIN SAP
SAP
PLL CLK
PLL ENV
ATF
PLL DATA
POWER CONT1
SEG1 — SEG19
POWER CONT2
LED CS
STEREO
F MONO
AUTO PRESET
TA MUTE
SMD
SAP
PLL CLK
TU ENABLE
AFT
TV/VTR
PLL DATA
TUNER
SEE PAGE 3-17, 19
SEG1-15
SEG16
SEG17
SEG18
SEG19
GRID6
CN904
CN901
CN902
POWER CONT1
POWER SW
CIRCS IN
SEG1 — SEG15
SEG16
SEG17
SEG18
SEG19
MODE CONTROL (790, 960)
(SEE PAGE 3-15, 16)
SYNC DET
CS
RST
SIN
SCLK
XTAL IN
XTAL OUT
IC401 (1/3)
OSD
X401 14.3MHz
CN903
FL DRIVER CS
SCLK
SO
SI
MODE CONTROL (760, 761, L5, L7)
(SEE PAGE 3-13)
SK
DO
DI
RS
CS
R/B
IC153 (MA-251)
IC203 (MA-252)
EEP ROM
ASURA RESET
EEP CS
EEP RESET
S CLK
S IN
S OUT
SYS CHECK
CHECK PIN
MA-252
LANC OUT
LANC IN
CN907
CHECK PIN
MA-251

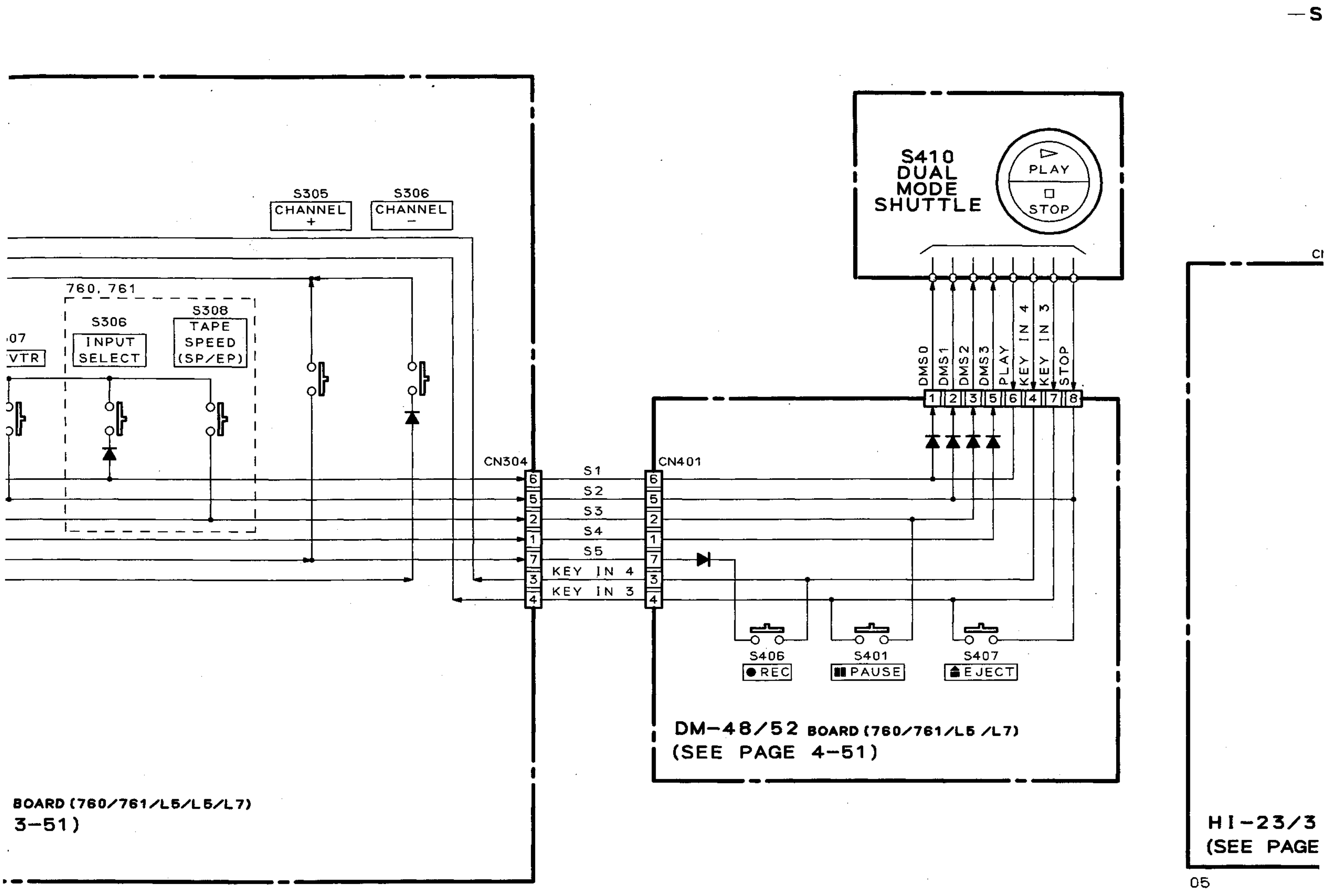

IC631
CONTROL-S
I/O INTERFACE
CONTROL S IN
CONTOL S OUT
REG ON/OFF
STATUS OUT
SIRCS IN
SIRCS OUT
+6V
CJ632
CONTROL S OUT
IC401 (2/3)
OSD
CS
SIN
SCLK
X401
14MHz
IC401 ⑧ REC/PB
5.9Vp-p (14.3kHz)
D6V
D151
D152
Q131
BUFFER
IC151
TUNER/TIMER
MODE CONTROL
H DET
SCK 0
SO 0
CG CS
SIO
SIRCS OUT
SIRCS IN
ASURA CS
POWER FAIL
RST
BUZZER
EDS DAV
EDS CS
TEX
TX
X151
32KHz
LANC IN
LANC OUT
EEP BUSY
EEP RST
EEP CK
SYS RESET
BZ151
BUZZER
STEREO
AUTO RESET
TA MUTE
MAIN SAP
SAP
PLL CLK
PLL ENV
ATF
PLL DATA
POWER CONT1
SEG1 — SEG19
POWER CONT2
LED CS
GRID6 — GRID1
A/D0
A/D1 — A/D6
IC152
POWER FAIL DET.
RESET PULSE
GENERATOR
OUT 1
OUT 2
Q132
SWITCH
IC131
EDS DAT SLICER
SI
V IN
HS/EXTAL
SCLK
LN21
XTAL/O/E
CS
MA-251
CN906
POWER CONT2
POWER CONT1
POWER
(SEE PAGE 3-24)
CN901
CN902
SEG1-15
SEG16
SEG17
SEG18
SEG19
GRID6
GRID5
GRID4
GRID3
GRID2
GRID1
A/D1
A/D2
A/D3
SEG1 — SEG15
CN903
A/D4
A/D5
LED CS
S CLK
ASURA RESET
SI
MODE CONTROL
(790, 960)
(SEE PAGE 3-15, 16)

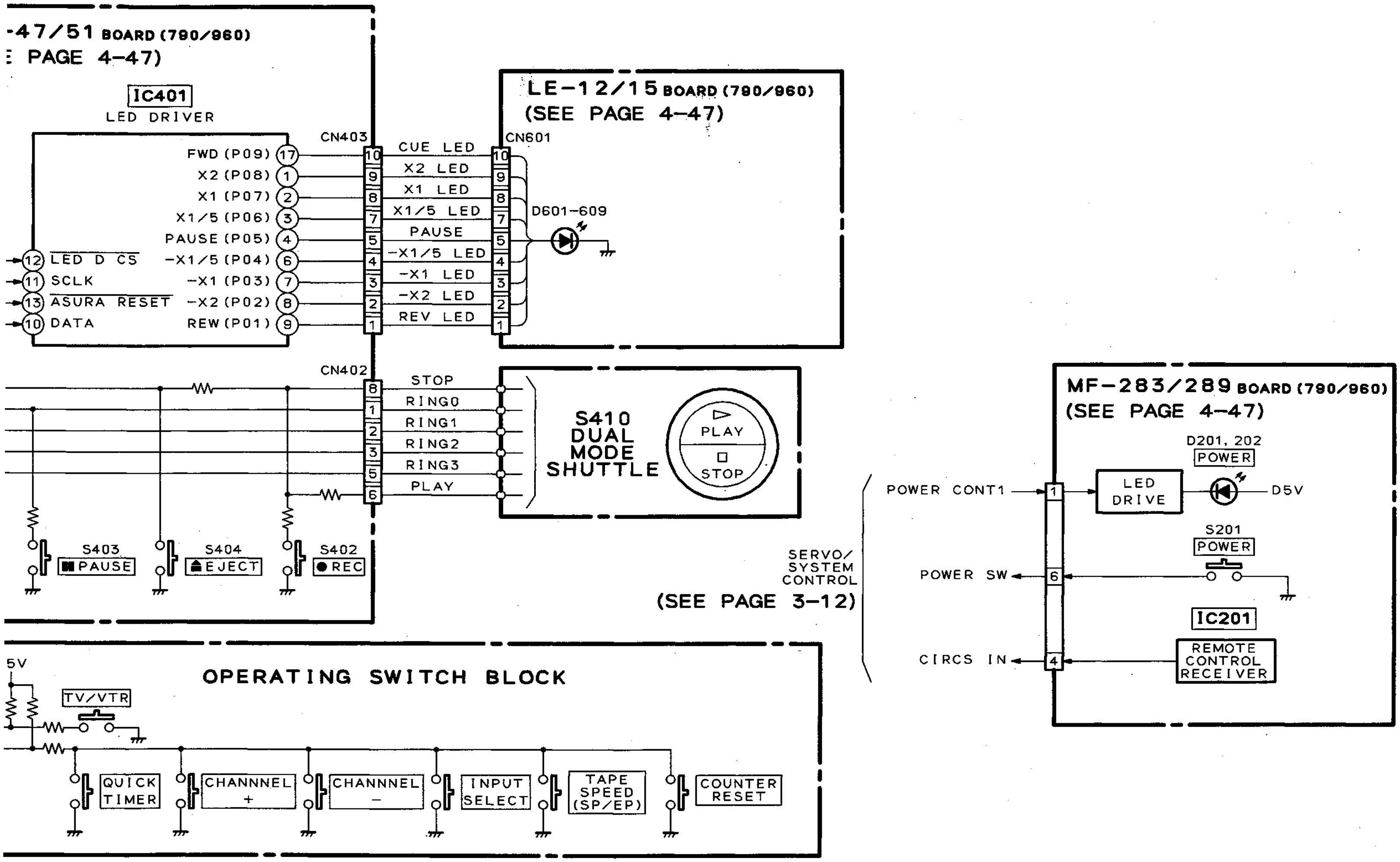
3-4. MODE CONTROL BLOCK DIAGRAM

—SLV-760/761/L5/L7—

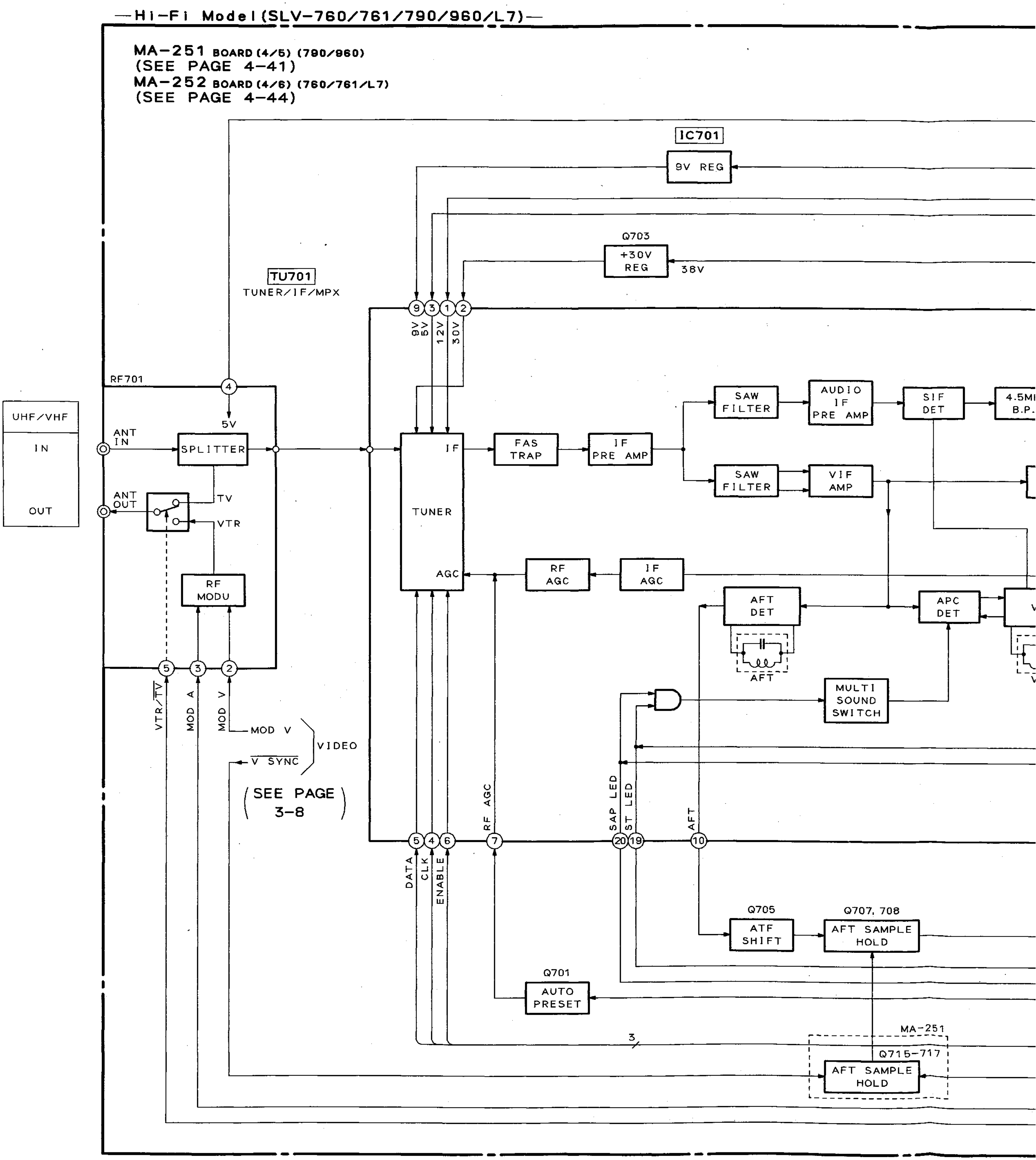

MF-284/290 BOARD
(760/761/L5/L7)
(SEE PAGE 3-51)
D5V
D201, 202
電源
S201
電源
CN201
POWER CONT
POWER SW
KEY IN 1
CN303
8
5
6
40
IC301
FL DRIVER
LED3 (POWER LED)
K4 13
K3 12
K1 10
K2 11
SERVO/
SYSTEM
CONTROL
(SEE PAGE 3-11)
SO
SI
S CLK
FL DRIVER CS
CN301
7
5
3
1
SO
SI
SCLK
CS
5 D OUT
6 D IN
8 SCLK
9 CS
S1 15
S2 16
S3 17
S4 18
S5 19
S6 20
1G—6G
37 — 32
S7—S16
21 — 31
L5, L7
S312
TAPE SPEED (SP/LP)
S307
TV/VTR
760, 761
S306
INPUT SELECT
S6 S5 S4 S3 S2 S1
10 — 5
37 — 28
38 39 40 41 42 43
1G—6G
P7—P16 P6 P5 P4 P3 P2 P1
FL301
FLUORESCENT INDICATOR TUBE
HI-24/37 BOARD (760/761/
(SEE PAGE 3-51)
05

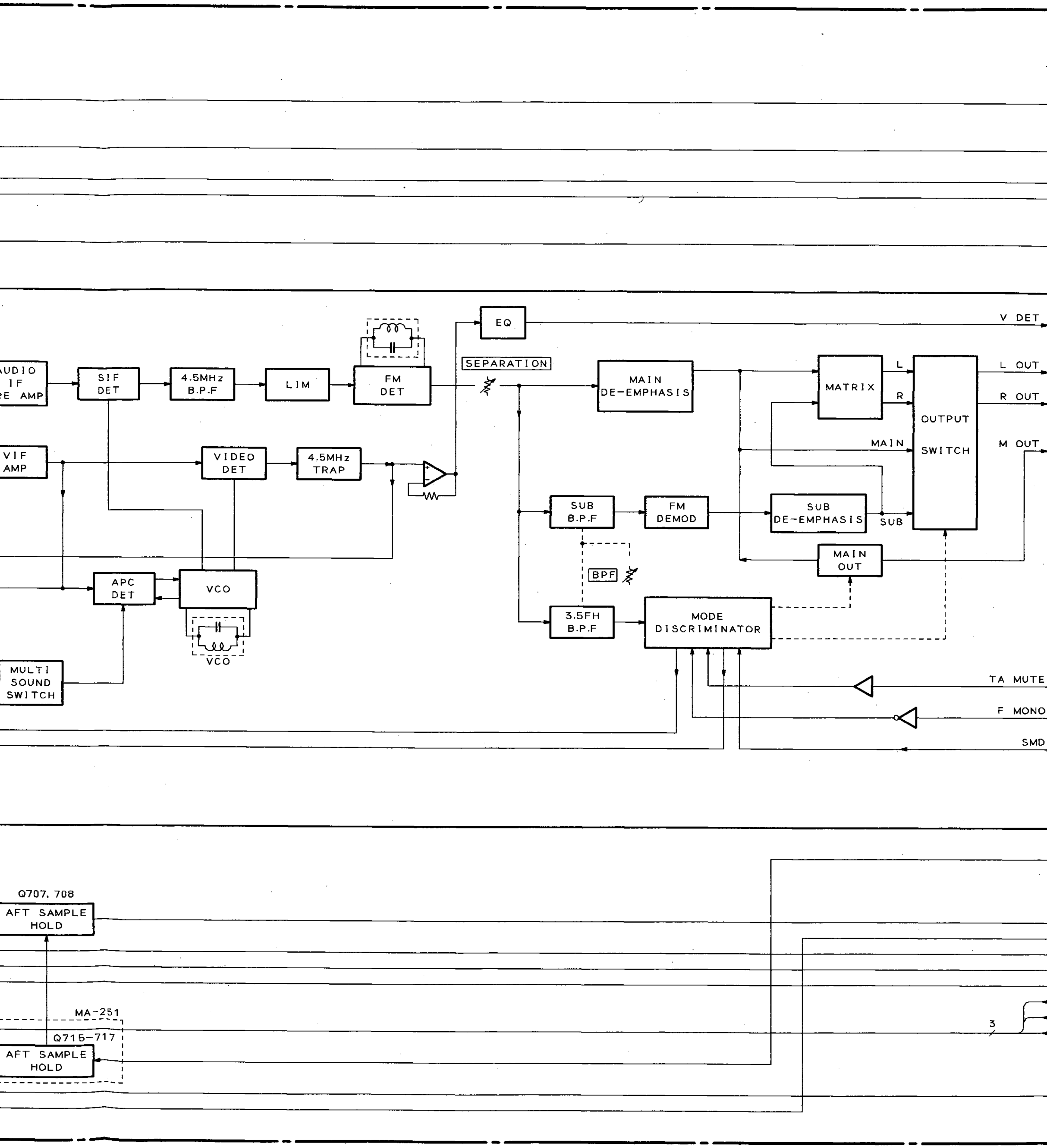

S305
CHANNEL +
S306
CHANNEL −
S410
DUAL
MODE
SHUTTLE
PLAY
STOP
L5, L7
S312
TAPE
SPEED
(SP/LP)
S307
TV/VTR
760, 761
S306
INPUT
SELECT
S308
TAPE
SPEED
(SP/EP)
DMS0
DMS1
DMS2
DMS3
PLAY
KEY IN 4
KEY IN 3
STOP
1 2 3 5 6 4 7 8
CN304
CN401
S1
S2
S3
S4
S5
KEY IN 4
KEY IN 3
6 5 2 1 7 3 4
S406
● REC
S401
▮▮ PAUSE
S407
⏏ EJECT
DM−48/52 BOARD (760/761/L5 /L7)
(SEE PAGE 4−51)
HI−24/37 BOARD (760/761/L5/L6/L7)
(SEE PAGE 3−51)

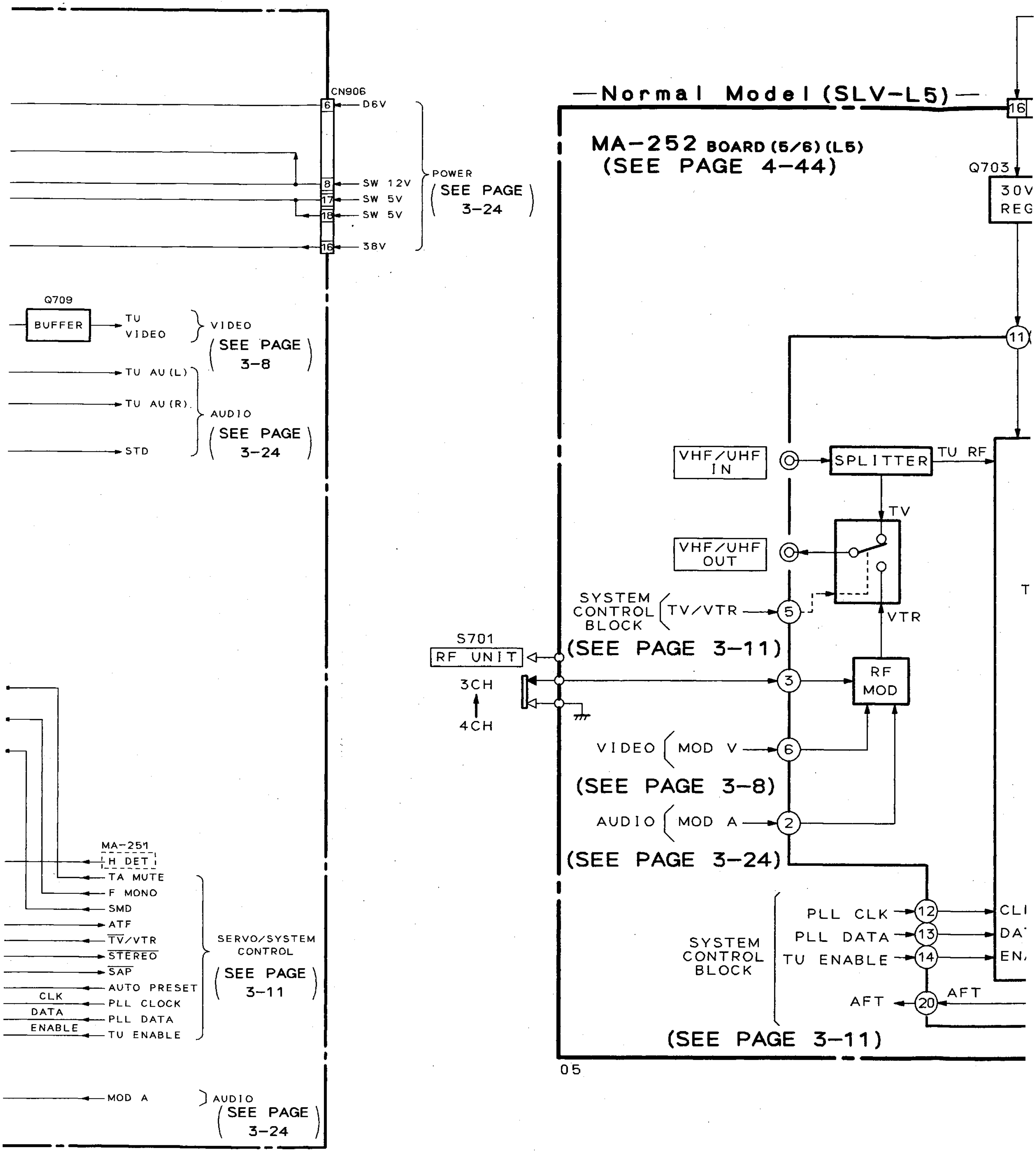

—S
S305
CHANNEL +
S306
CHANNEL −
760, 761
S306
INPUT SELECT
S308
TAPE SPEED (SP/EP)
07
VTR
CN304
CN401
S1
S2
S3
S4
S5
KEY IN 4
KEY IN 3
S410
DUAL MODE SHUTTLE
PLAY
STOP
DMS0
DMS1
DMS2
DMS3
PLAY
KEY IN 4
KEY IN 3
STOP
S406
● REC
S401
▮▮ PAUSE
S407
EJECT
DM−48/52 BOARD (760/761/L5 /L7)
(SEE PAGE 4−51)
BOARD (760/761/L5/L6/L7)
3−51)
HI−23/3
(SEE PAGE
05

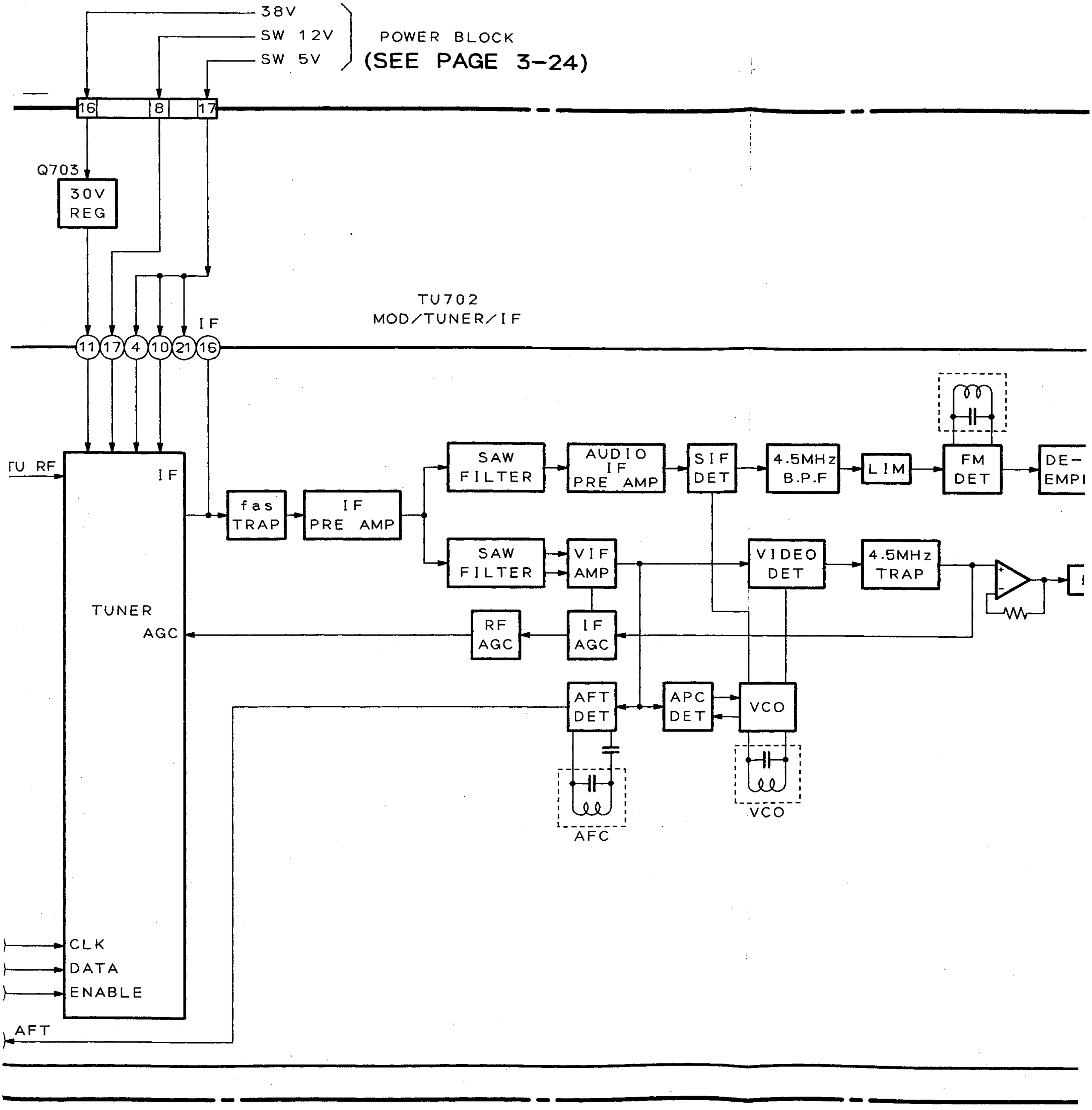

-47/51 BOARD (790/960)
: PAGE 4-47)
IC401
LED DRIVER
CN403
FWD (P09) 17
X2 (P08) 1
X1 (P07) 2
X1/5 (P06) 3
PAUSE (P05) 4
12 LED D CS
-X1/5 (P04) 6
11 SCLK
-X1 (P03) 7
13 ASURA RESET
-X2 (P02) 8
10 DATA
REW (P01) 9
CUE LED
X2 LED
X1 LED
X1/5 LED
PAUSE
-X1/5 LED
-X1 LED
-X2 LED
REV LED
LE-12/15 BOARD (790/960)
(SEE PAGE 4-47)
CN601
D601-609
CN402
STOP
RING0
RING1
RING2
RING3
PLAY
S410
DUAL
MODE
SHUTTLE
PLAY
STOP
S403
PAUSE
S404
EJECT
S402
REC
MF-283/289 BOARD (790/960)
(SEE PAGE 4-47)
D201, 202
POWER
LED
DRIVE
D5V
S201
POWER
IC201
REMOTE
CONTROL
RECEIVER
POWER CONT1
POWER SW
CIRCS IN
SERVO/
SYSTEM
CONTROL
(SEE PAGE 3-12)
OPERATING SWITCH BLOCK
5V
TV/VTR
QUICK
TIMER
CHANNNEL
+
CHANNNEL
−
INPUT
SELECT
TAPE
SPEED
(SP/EP)
COUNTER
RESET

3-5. TUNER BLOCK DIAGRAM

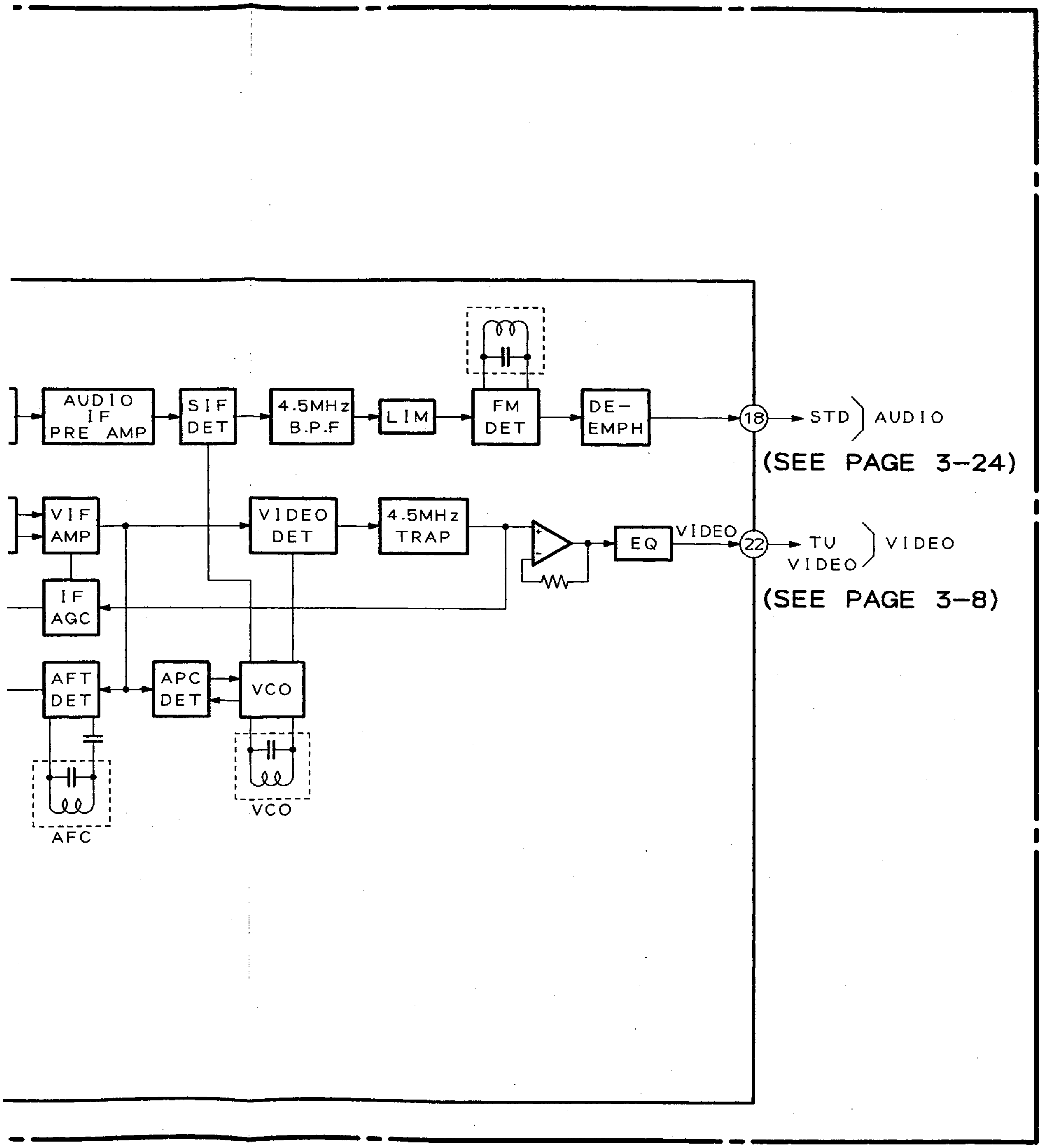

—Hi-Fi Model(SLV-760/761/790/960/L7)—
MA-251 BOARD (4/5) (790/960)
(SEE PAGE 4-41)
MA-252 BOARD (4/6) (760/761/L7)
(SEE PAGE 4-44)
IC701
9V REG
Q703
+30V REG
38V
TU701
TUNER/IF/MPX
9 3 1 2
9V 5V 12V 30V
RF701
4
5V
UHF/VHF
IN
OUT
ANT IN
ANT OUT
SPLITTER
TV
VTR
RF MODU
5 3 2
VTR/TV
MOD A
MOD V
MOD V
V SYNC
VIDEO
(SEE PAGE 3-8)
TUNER
IF
AGC
FAS TRAP
IF PRE AMP
SAW FILTER
AUDIO IF PRE AMP
SIF DET
4.5MI B.P.
SAW FILTER
VIF AMP
RF AGC
IF AGC
AFT DET
AFT
APC DET
MULTI SOUND SWITCH
RF AGC
SAP LED
ST LED
AFT
5 4 6
7
20 19
10
DATA
CLK
ENABLE
Q705
ATF SHIFT
Q707, 708
AFT SAMPLE HOLD
Q701
AUTO PRESET
3
MA-251
Q715-717
AFT SAMPLE HOLD


UDIO
IF
E AMP
SIF DET
4.5MHz B.P.F
LIM
FM DET
EQ
V DET
SEPARATION
MAIN DE-EMPHASIS
MATRIX
L
R
OUTPUT SWITCH
L OUT
R OUT
MAIN
M OUT
VIF AMP
VIDEO DET
4.5MHz TRAP
SUB B.P.F
FM DEMOD
SUB DE-EMPHASIS
SUB
MAIN OUT
BPF
APC DET
VCO
VCO
3.5FH B.P.F
MODE DISCRIMINATOR
MULTI SOUND SWITCH
TA MUTE
F MONO
SMD
Q707, 708
AFT SAMPLE HOLD
MA-251
Q715-717
AFT SAMPLE HOLD
3

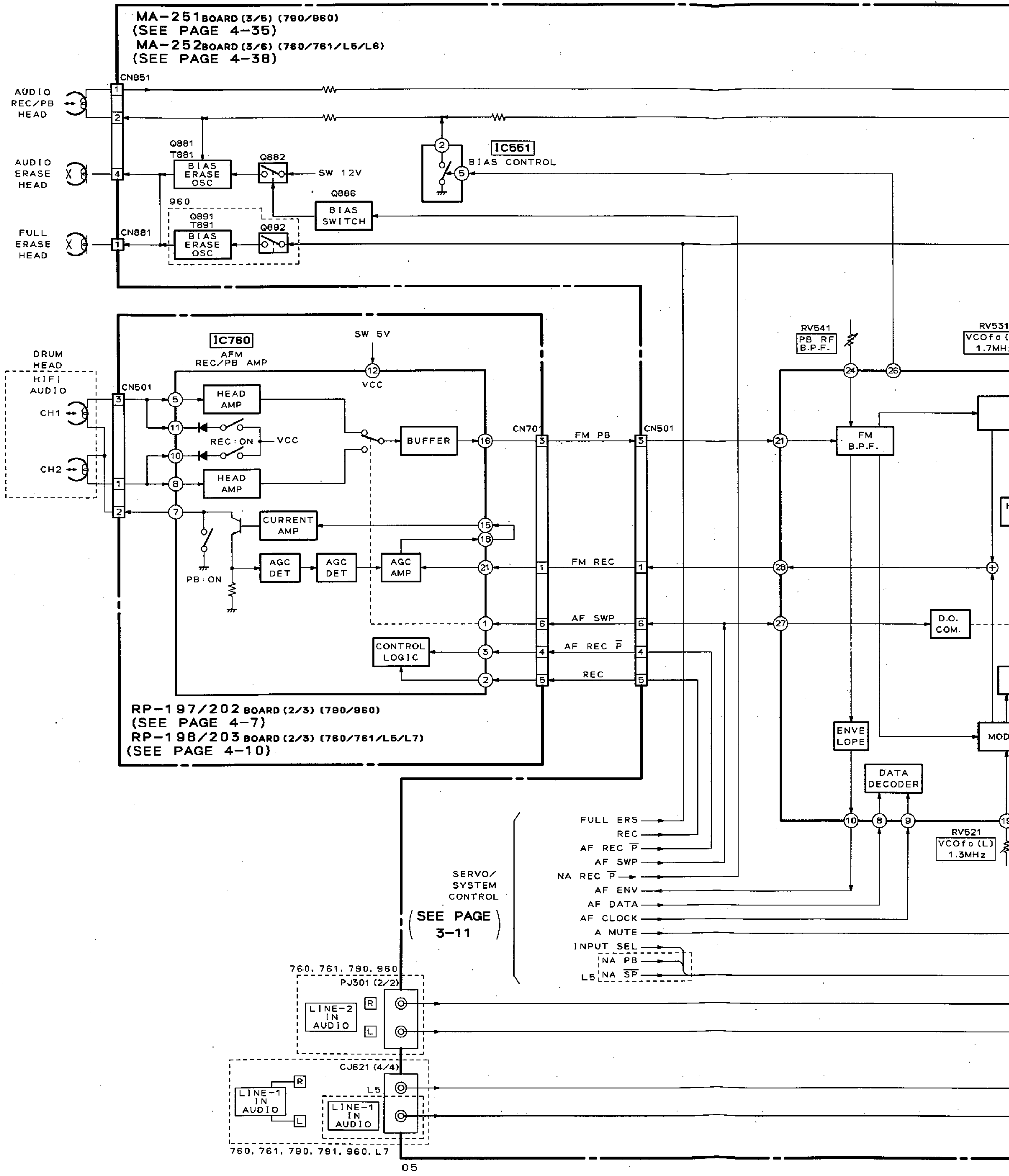

CN906
6 D6V
8 SW 12V
17 SW 5V
18 SW 5V
16 38V
POWER
(SEE PAGE 3-24)
Q709
BUFFER
TU VIDEO
VIDEO
(SEE PAGE 3-8)
TU AU(L)
TU AU(R)
STD
AUDIO
(SEE PAGE 3-24)
MA-251
H DET
TA MUTE
F MONO
SMD
ATF
TV/VTR
STEREO
SAP
AUTO PRESET
CLK
PLL CLOCK
DATA
PLL DATA
ENABLE
TU ENABLE
SERVO/SYSTEM CONTROL
(SEE PAGE 3-11)
MOD A
AUDIO
(SEE PAGE 3-24)
—Normal Model (SLV-L5)—
16
MA-252 BOARD (5/6) (L5)
(SEE PAGE 4-44)
Q703
30V REG
11
VHF/UHF IN
SPLITTER
TU RF
TV
VHF/UHF OUT
SYSTEM CONTROL BLOCK
TV/VTR
5
VTR
(SEE PAGE 3-11)
S701
RF UNIT
3CH
4CH
3
RF MOD
VIDEO
MOD V
6
(SEE PAGE 3-8)
AUDIO
MOD A
2
(SEE PAGE 3-24)
SYSTEM CONTROL BLOCK
PLL CLK
12
PLL DATA
13
TU ENABLE
14
AFT
20
AFT
CL
DA
EN
T
(SEE PAGE 3-11)
05


38V
SW 12V
SW 5V
POWER BLOCK
(SEE PAGE 3-24)
16
8
17
Q703
30V REG
TU702
MOD/TUNER/IF
IF
11
17
4
10
21
16
TU RF
TUNER
IF
AGC
CLK
DATA
ENABLE
AFT
fas TRAP
IF PRE AMP
SAW FILTER
AUDIO IF PRE AMP
SIF DET
4.5MHz B.P.F
LIM
FM DET
DE-EMP
SAW FILTER
VIF AMP
VIDEO DET
4.5MHz TRAP
RF AGC
IF AGC
AFT DET
APC DET
VCO
AFC
VCO

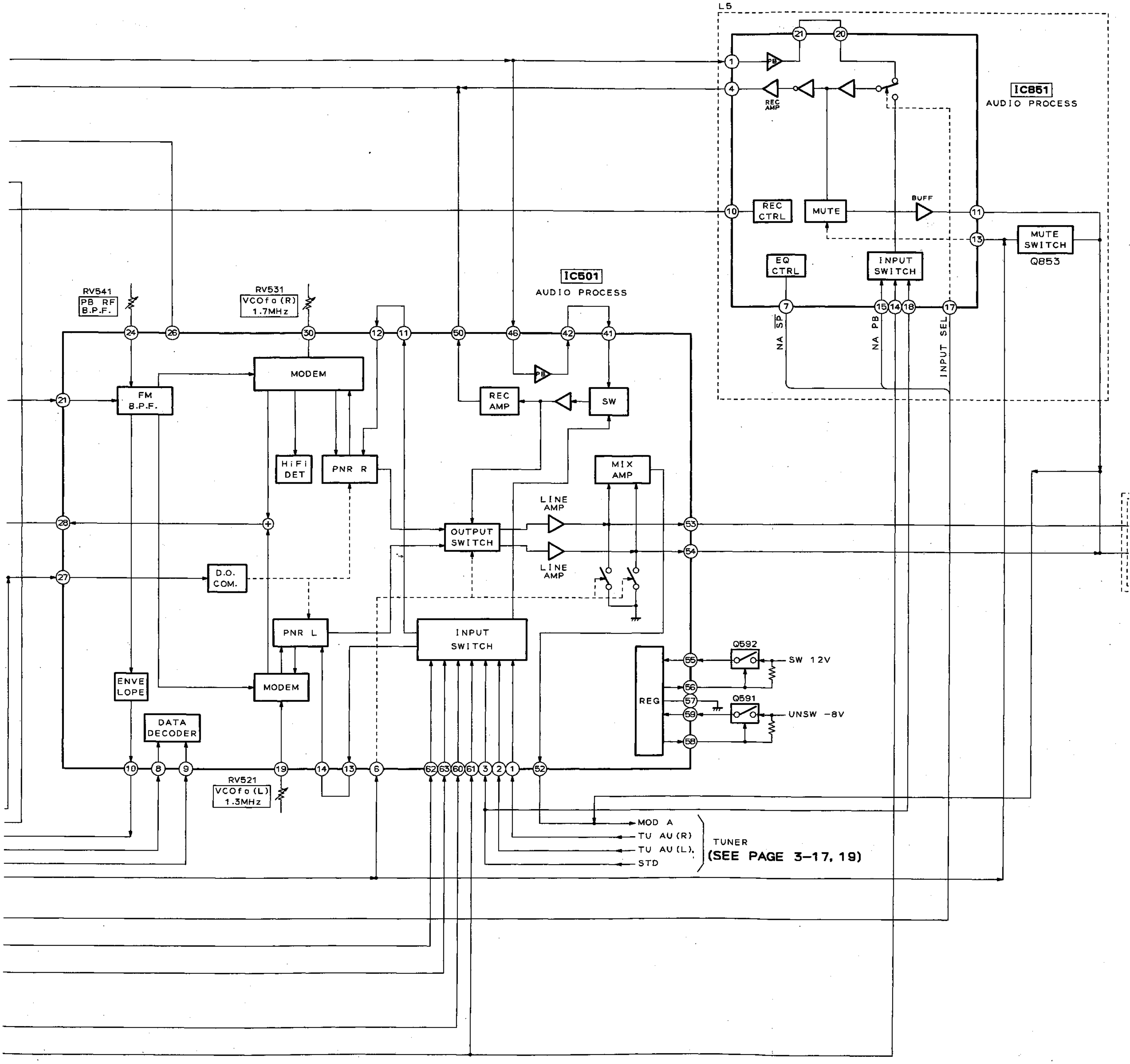
-24)

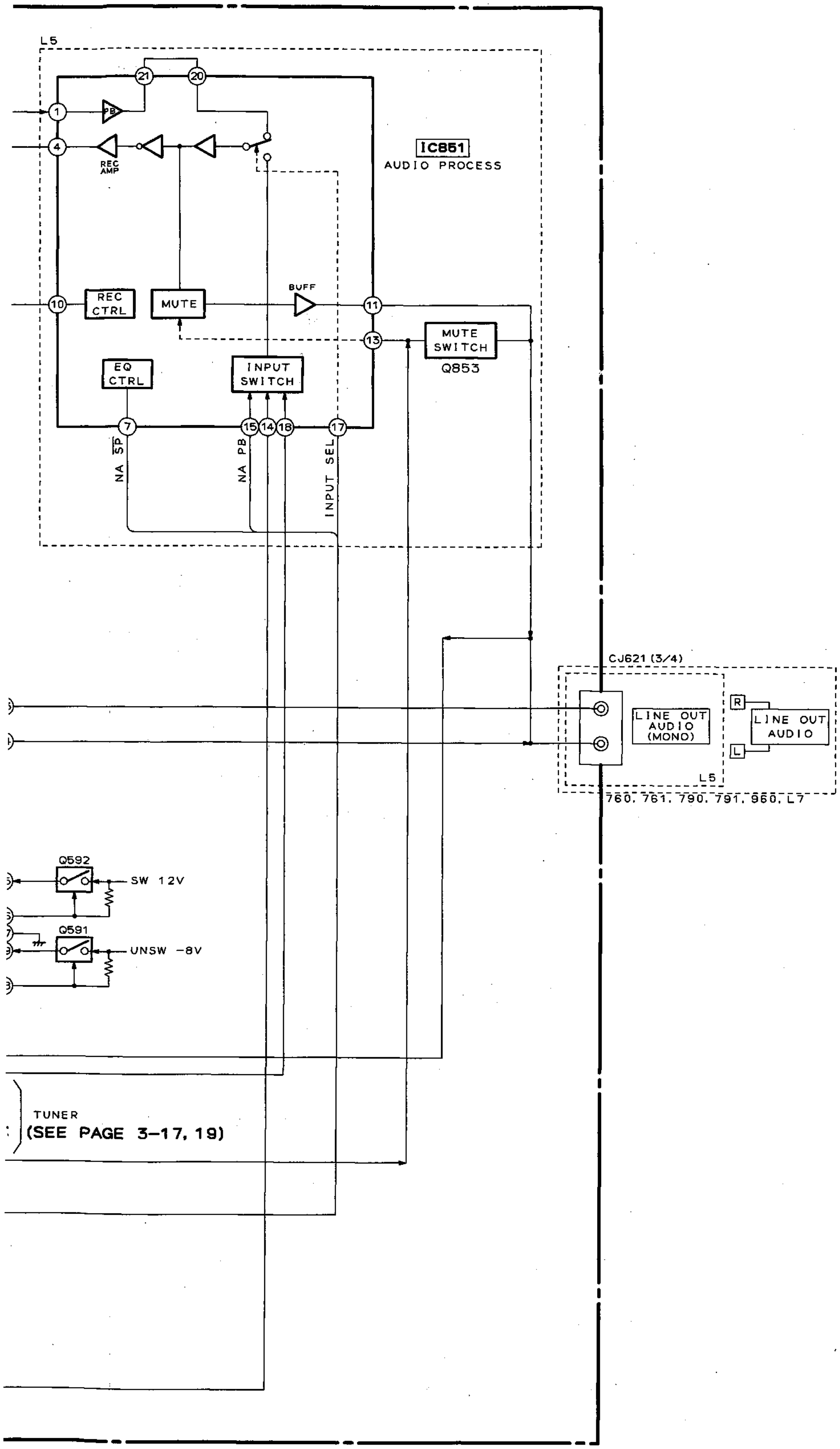

AUDIO IF PRE AMP
SIF DET
4.5MHz B.P.F
LIM
FM DET
DE-EMPH
18
STD
AUDIO
(SEE PAGE 3-24)
VIF AMP
VIDEO DET
4.5MHz TRAP
EQ
VIDEO
22
TU VIDEO
VIDEO
(SEE PAGE 3-8)
IF AGC
AFT DET
APC DET
VCO
VCO
AFC

3-6. AUDIO/IO BLOCK DIAGRAM

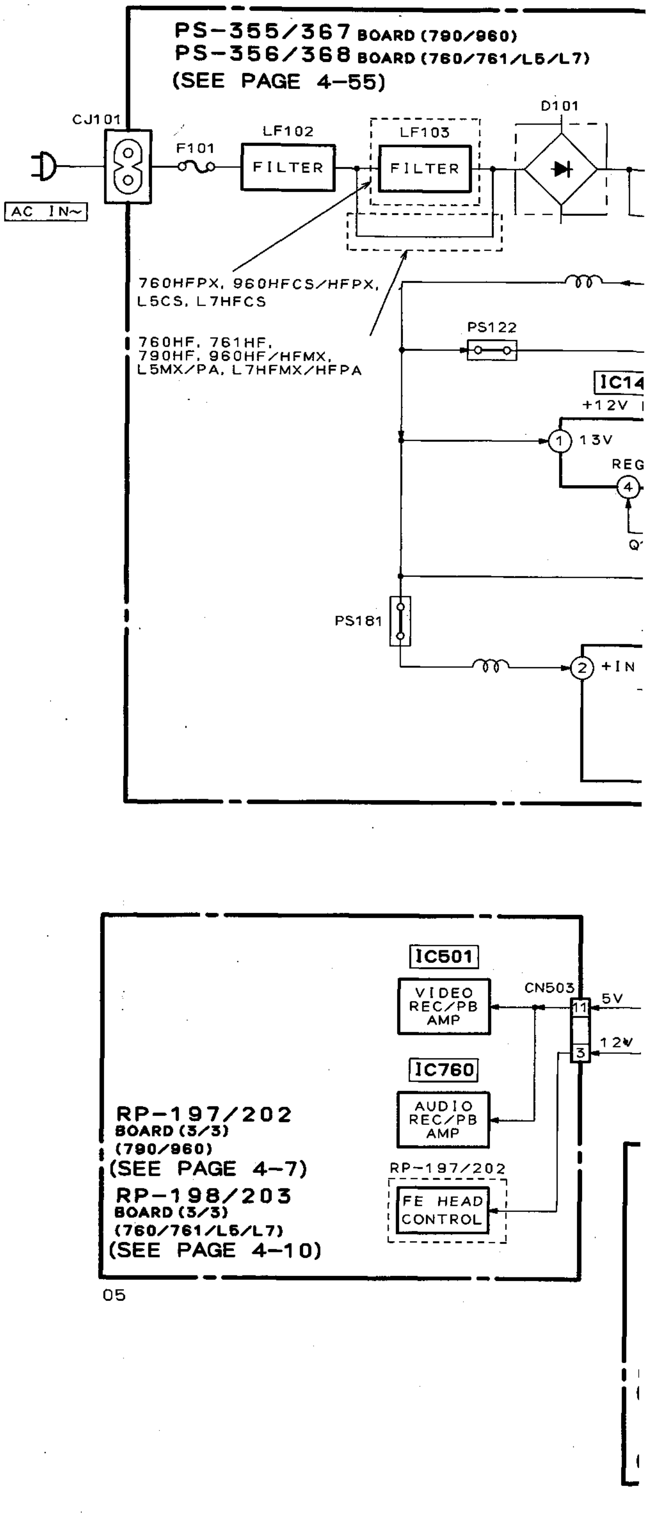


MA-251 BOARD (3/5) (790/960)
(SEE PAGE 4-35)
MA-252 BOARD (3/6) (760/761/L5/L6)
(SEE PAGE 4-38)
CN851
AUDIO REC/PB HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
CN881
Q881 T881
BIAS ERASE OSC
Q882
SW 12V
Q886
BIAS SWITCH
960
Q891 T891
BIAS ERASE OSC
Q892
IC551
BIAS CONTROL
DRUM HEAD
HIFI AUDIO
CH1
CH2
CN501
IC760
AFM REC/PB AMP
SW 5V
VCC
HEAD AMP
REC : ON
VCC
HEAD AMP
BUFFER
CURRENT AMP
PB : ON
AGC DET
AGC DET
AGC AMP
CONTROL LOGIC
CN701
CN501
FM PB
FM REC
AF SWP
AF REC P
REC
RP-197/202 BOARD (2/3) (790/960)
(SEE PAGE 4-7)
RP-198/203 BOARD (2/3) (760/761/L5/L7)
(SEE PAGE 4-10)
RV541
PB RF B.P.F.
RV531
VCOfo
1.7MH
FM B.P.F.
D.O. COM.
ENVE LOPE
DATA DECODER
MOD
RV521
VCOfo (L)
1.3MHz
FULL ERS
REC
AF REC P
AF SWP
NA REC P
AF ENV
AF DATA
AF CLOCK
A MUTE
INPUT SEL
NA PB
NA SP
L5
SERVO/ SYSTEM CONTROL
(SEE PAGE 3-11)
760, 761, 790, 960
PJ301 (2/2)
LINE-2 IN AUDIO
R
L
CJ621 (4/4)
LINE-1 IN AUDIO
R
L
L5
LINE-1 IN AUDIO
760, 761, 790, 791, 960, L7
05

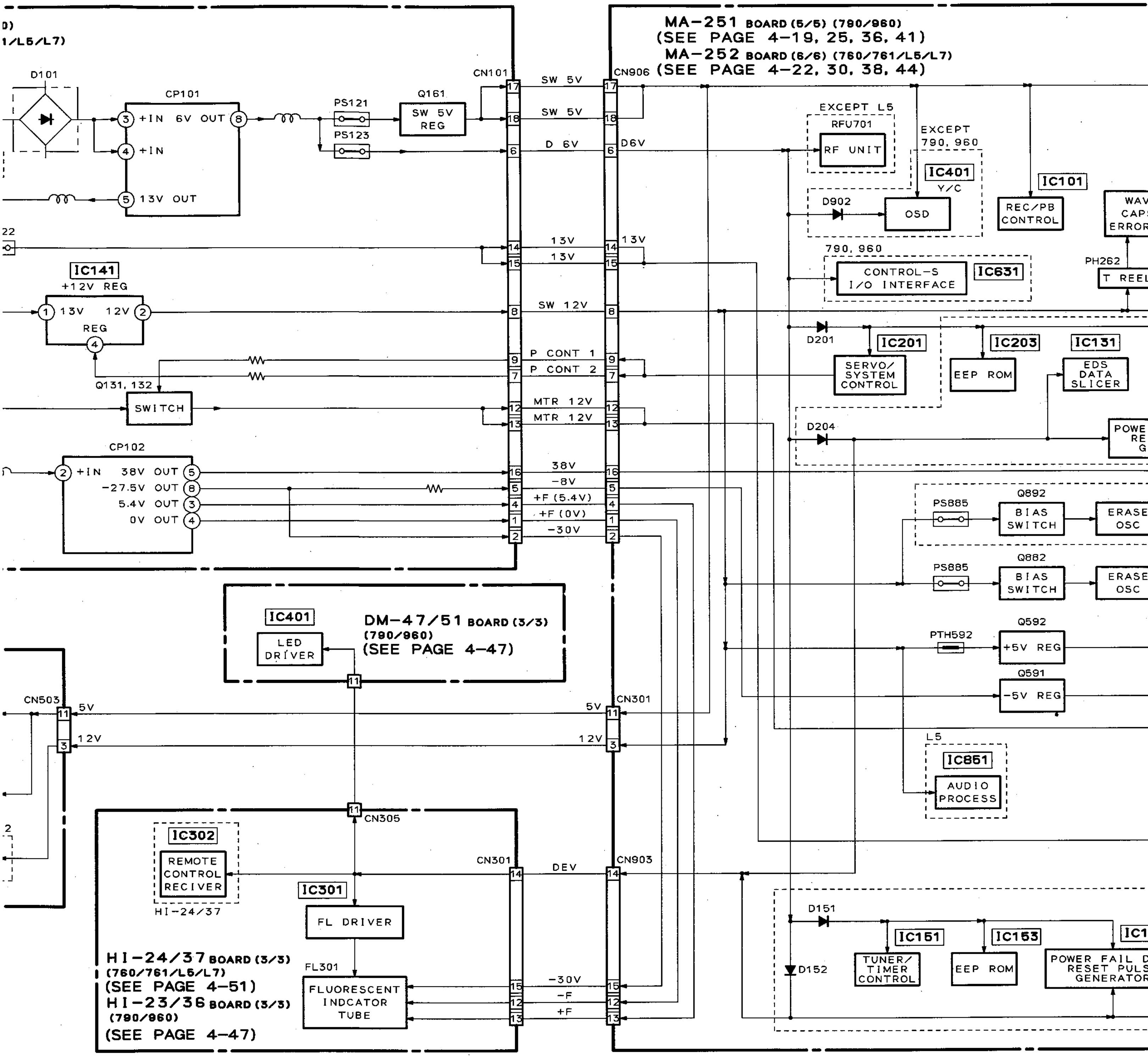

L5
IC851
AUDIO PROCESS
PB
REC AMP
REC CTRL
MUTE
BUFF
EQ CTRL
INPUT SWITCH
MUTE SWITCH
Q853
NA SP
NA PB
INPUT SEL
IC501
AUDIO PROCESS
RV541
PB RF B.P.F.
RV531
VCOfo (R) 1.7MHz
MODEM
FM B.P.F.
REC AMP
SW
HiFi DET
PNR R
MIX AMP
LINE AMP
OUTPUT SWITCH
LINE AMP
D.O. COM.
PNR L
INPUT SWITCH
ENVE LOPE
MODEM
DATA DECODER
REG
Q592
SW 12V
Q591
UNSW -8V
RV521
VCOfo (L) 1.3MHz
MOD A
TU AU (R)
TU AU (L)
STD
TUNER
(SEE PAGE 3-17, 19)


L5
IC851
AUDIO PROCESS
PB
REC AMP
21
20
1
4
10
11
13
7
15
14
18
17
REC CTRL
MUTE
BUFF
MUTE SWITCH
Q853
EQ CTRL
INPUT SWITCH
NA SP
NA PB
INPUT SEL
CJ621 (3/4)
LINE OUT AUDIO (MONO)
L5
R
L
LINE OUT AUDIO
760, 761, 790, 791, 960, L7
Q592
SW 12V
Q591
UNSW -8V
TUNER
(SEE PAGE 3-17, 19)

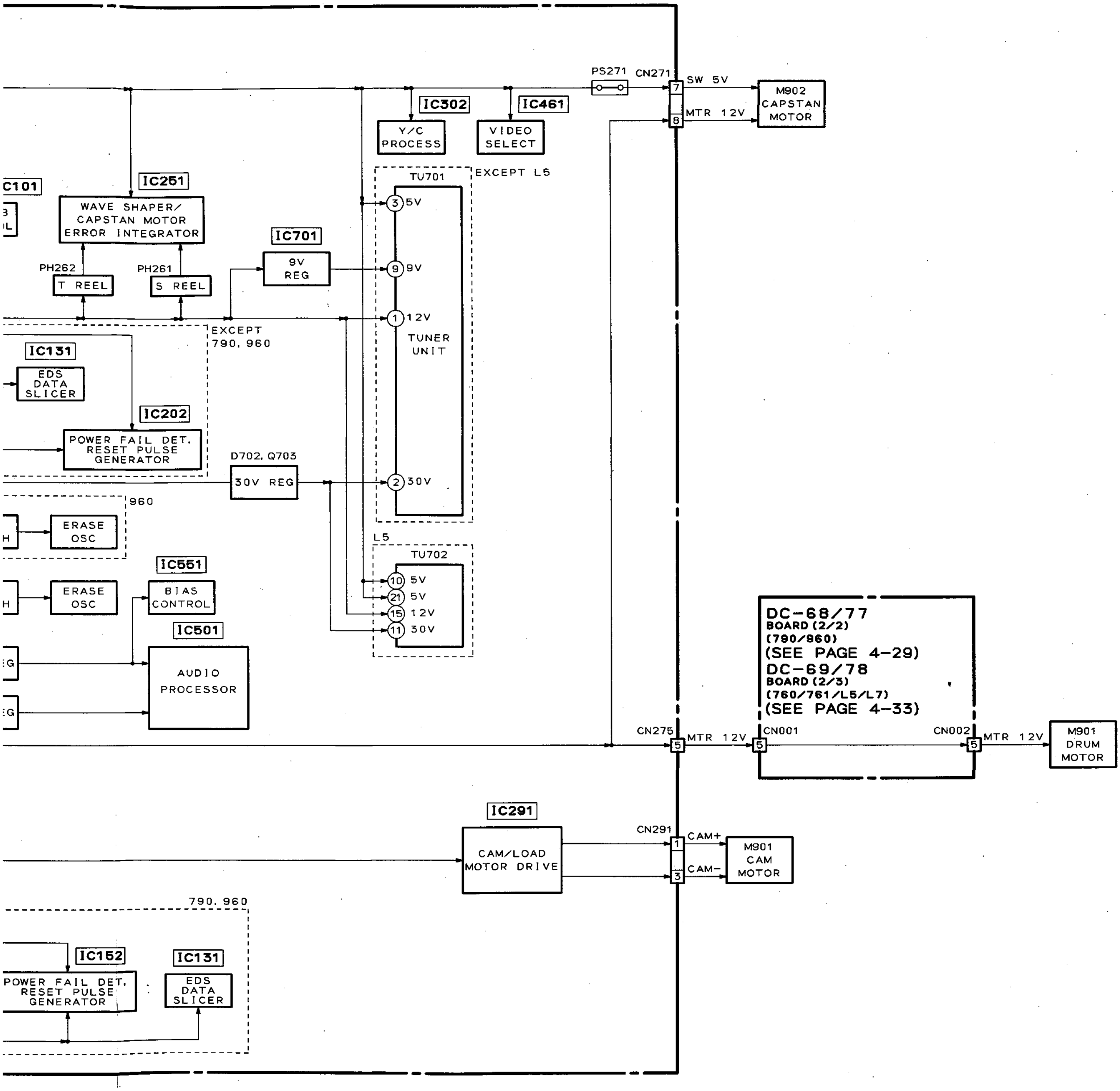
3-7. POWER SUPPLY BLOCK DIAGRA


PS-355/367 BOARD (790/960)
PS-356/368 BOARD (760/761/L5/L7)
(SEE PAGE 4-55)
CJ101
AC IN~
F101
LF102
FILTER
LF103
FILTER
D101
760HFPX, 960HFCS/HFPX, L5CS, L7HFCS
760HF, 761HF, 790HF, 960HF/HFMX, L5MX/PA, L7HFMX/HFPA
PS122
IC14
+12V
1
13V
REG
4
Q
PS181
2
+IN
IC501
VIDEO REC/PB AMP
CN503
11
5V
3
12V
IC760
AUDIO REC/PB AMP
RP-197/202
FE HEAD CONTROL
RP-197/202 BOARD (3/3) (790/960)
(SEE PAGE 4-7)
RP-198/203 BOARD (3/3) (760/761/L5/L7)
(SEE PAGE 4-10)
05

DIAGRAM



D)
1/L5/L7)
D101
CP101
+IN 6V OUT
+IN
13V OUT
PS121
PS123
Q161
SW 5V REG
CN101
SW 5V
SW 5V
D 6V
13V
13V
SW 12V
P CONT 1
P CONT 2
MTR 12V
MTR 12V
38V
-8V
+F (5.4V)
+F (0V)
-30V
22
IC141
+12V REG
13V 12V
REG
Q131, 132
SWITCH
CP102
+IN 38V OUT
-27.5V OUT
5.4V OUT
0V OUT
MA-251 BOARD (5/5) (790/960)
(SEE PAGE 4-19, 25, 36, 41)
MA-252 BOARD (6/6) (760/761/L5/L7)
(SEE PAGE 4-22, 30, 38, 44)
CN906
D6V
13V
EXCEPT L5
RFU701
RF UNIT
EXCEPT 790, 960
IC401
Y/C
D902
OSD
IC101
REC/PB CONTROL
WAV CAPS ERROR
790, 960
CONTROL-S I/O INTERFACE
IC631
PH262
T REEL
D201
IC201
SERVO/ SYSTEM CONTROL
IC203
EEP ROM
IC131
EDS DATA SLICER
D204
POWE RE G
PS885
Q892
BIAS SWITCH
ERASE OSC
PS885
Q882
BIAS SWITCH
ERASE OSC
PTH592
Q592
+5V REG
Q591
-5V REG
L5
IC851
AUDIO PROCESS
IC401
LED DRIVER
DM-47/51 BOARD (3/3)
(790/960)
(SEE PAGE 4-47)
CN503
5V
12V
2
CN301
5V
12V
CN305
IC302
REMOTE CONTROL RECIVER
HI-24/37
IC301
FL DRIVER
CN301
DEV
CN903
FL301
FLUORESCENT INDCATOR TUBE
-30V
-F
+F
HI-24/37 BOARD (3/3)
(760/761/L5/L7)
(SEE PAGE 4-51)
HI-23/36 BOARD (3/3)
(790/960)
(SEE PAGE 4-47)
D151
D152
IC151
TUNER/ TIMER CONTROL
IC153
EEP ROM
IC1
POWER FAIL D RESET PULS GENERATOR


PS271
CN271
7
SW 5V
8
MTR 12V
M902
CAPSTAN
MOTOR
IC302
Y/C
PROCESS
IC461
VIDEO
SELECT
EXCEPT L5
TU701
C101
IC251
WAVE SHAPER/
CAPSTAN MOTOR
ERROR INTEGRATOR
3 5V
IC701
9V
REG
9 9V
PH262
T REEL
PH261
S REEL
1 12V
TUNER
UNIT
EXCEPT
790, 960
IC131
EDS
DATA
SLICER
IC202
POWER FAIL DET.
RESET PULSE
GENERATOR
D702, Q703
30V REG
2 30V
960
ERASE
OSC
L5
TU702
10 5V
21 5V
15 12V
11 30V
IC551
BIAS
CONTROL
ERASE
OSC
IC501
AUDIO
PROCESSOR
DC-68/77
BOARD (2/2)
(790/960)
(SEE PAGE 4-29)
DC-69/78
BOARD (2/3)
(760/761/L5/L7)
(SEE PAGE 4-33)
CN275
5
MTR 12V
CN001
5
CN002
5
MTR 12V
M901
DRUM
MOTOR
IC291
CAM/LOAD
MOTOR DRIVE
CN291
1
CAM+
3
CAM−
M901
CAM
MOTOR
790, 960
IC152
POWER FAIL DET.
RESET PULSE
GENERATOR
IC131
EDS
DATA
SLICER

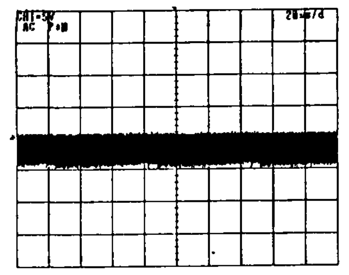
- Signal path

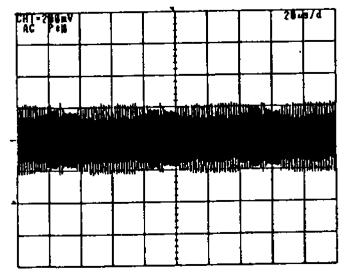
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡>	➡>>	➡
PB	⇨	⇨>	⇨>>	⇨

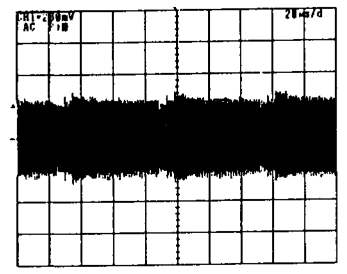
- Signal path

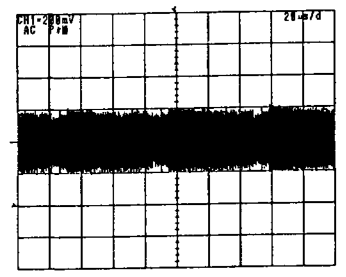
	REC	REC/PB	PB
Ref. signal	➤	➢	▷

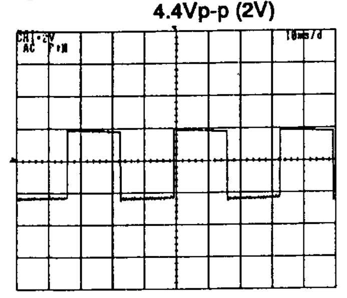
- Waveforms

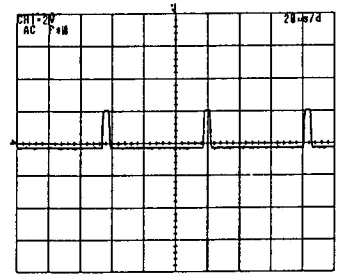

❶ IC501 ④ REC 5Vp-p (H)

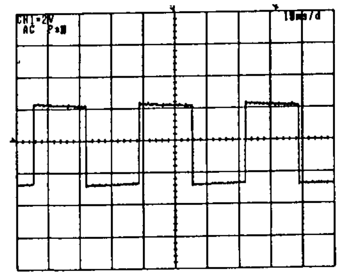

❷ IC501 ㉘ REC 360mV (H)


❸ IC501 ㉗ PB 480mVp-p (H)


❹ IC501 ㉔ PB 400mVp-p (H)

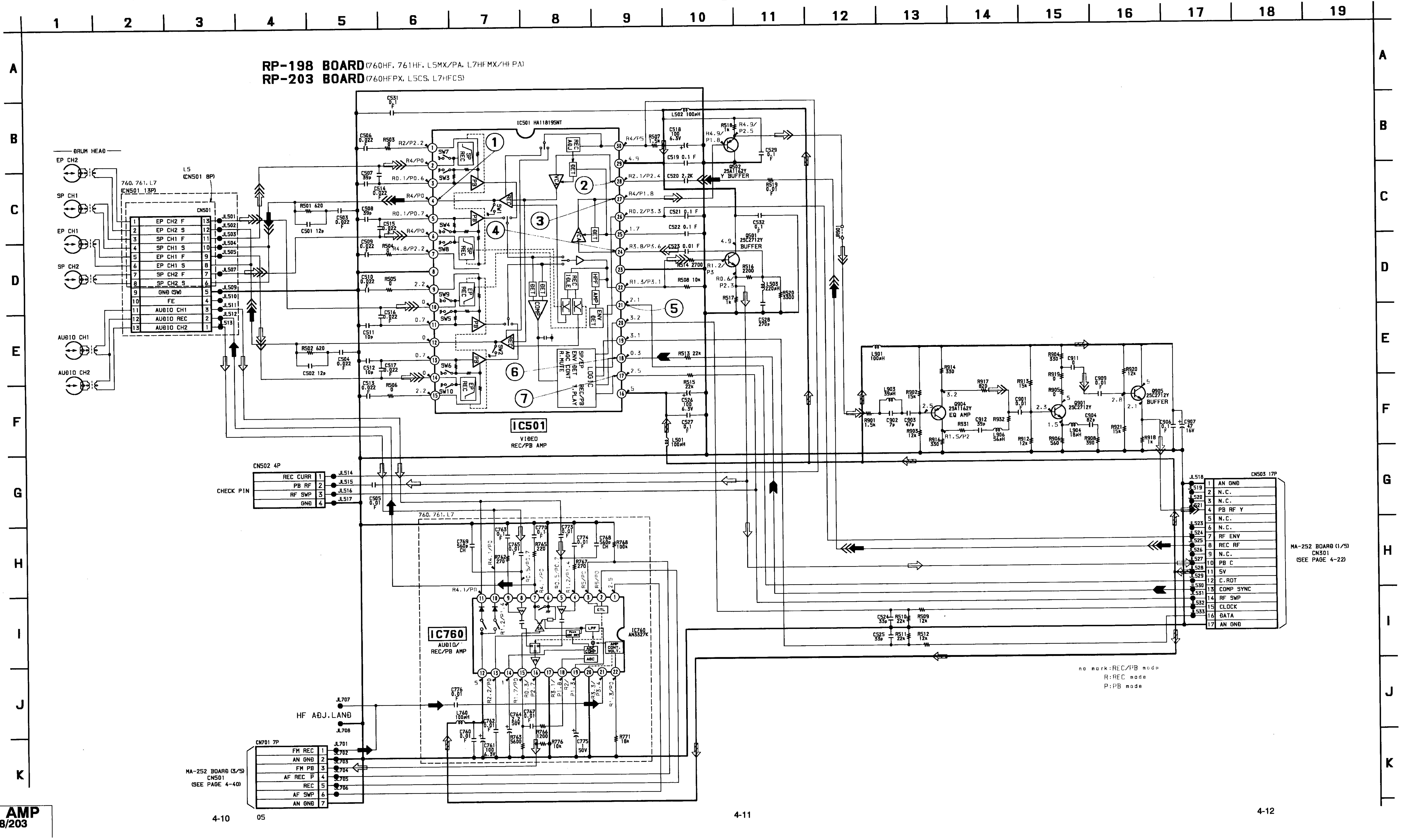

❺ IC501 ㉑ REC/PB 4.4Vp-p (2V)


❻ IC501 ⑱ REC/PB 2.4Vp-p (H)


❼ IC501 ⑰ REC/PB 5Vp-p (2V)

PR-198/203 (HEAD AMP) (SLV-760/761/L5/L7) SCHEMATIC DIAGRAM • **See page 4-4 to 4-6 for printed wiring board.**

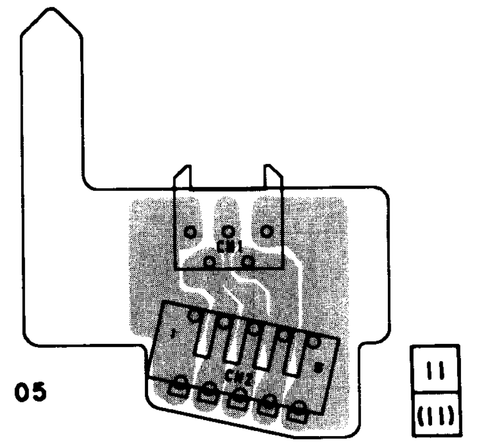
– Ref. No.: RP-198/203 Board; 2,000 series –


RP-198 BOARD(760HF, 761HF, L5MX/PA, L7HFMX/HFPA)
RP-203 BOARD(760HFPX, L5CS, L7HFCS)
DRUM HEAD
EP CH2
SP CH1
EP CH1
SP CH2
AUDIO CH1
AUDIO CH2
L5 (CN501 8P)
760, 761, L7 (CN501 13P)
CN501
1 EP CH2 F 13
2 EP CH2 S 12
3 SP CH1 F 11
4 SP CH1 S 10
5 EP CH1 F 9
6 EP CH1 S 8
7 SP CH2 F 7
8 SP CH2 S 6
9 GND (SW) 5
10 FE 4
11 AUDIO CH1 3
12 AUDIO REC 2
13 AUDIO CH2 1
JL501
JL502
JL503
JL504
JL505
JL507
JL509
JL510
JL511
JL512
JL513
IC501 HA118195NT
IC501
VIDEO REC/PB AMP
Q502 2SA1162Y Y BUFFER
Q501 2SC2712Y BUFFER
L502 100µH
L501 100µH
L503 220µH
CN502 4P
1 REC CURR
2 PB RF
3 RF SWP
4 GND
CHECK PIN
JL514
JL515
JL516
JL517
Q904 2SA1162Y EQ AMP
Q901 2SC2712Y
Q905 2SC2712Y BUFFER
L901 100µH
L903 39µH
L904 18µH
L906 56µH
760, 761, L7
IC760
AUDIO REC/PB AMP
IC760 AN3327K
CN503 17P
1 AN GND
2 N.C.
3 N.C.
4 PB RF Y
5 N.C.
6 N.C.
7 RF ENV
8 REC RF
9 N.C.
10 PB C
11 SV
12 C.ROT
13 COMP SYNC
14 RF SWP
15 CLOCK
16 DATA
17 AN GND
JL518
JL519
JL520
JL521
JL523
JL524
JL525
JL526
JL527
JL528
JL529
JL530
JL531
JL532
JL533
MA-252 BOARD (1/5) CN301 (SEE PAGE 4-22)
no mark:REC/PB mode
R:REC mode
P:PB mode
JL707
HF ADJ.LAND
JL708
CN701 7P
FM REC 1
AN GND 2
FM PB 3
AF REC P̄ 4
REC 5
AF SWP 6
AN GND 7
JL701
JL702
JL703
JL704
JL705
JL706
MA-252 BOARD (3/5) CN501 (SEE PAGE 4-40)
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
A
B
C
D
E
F
G
H
I
J
K

There are cases that the part isn't mounted in this model is printed on this diagram.

MA-251 (SERVO/SYSTEM/TUNER/TIMER/MODE CONTROL, VIDEO, AUDIO, IO, TUNER) (SLV-790/960), DC-68/77 (REALY) PRINTED WIRING BOARDS

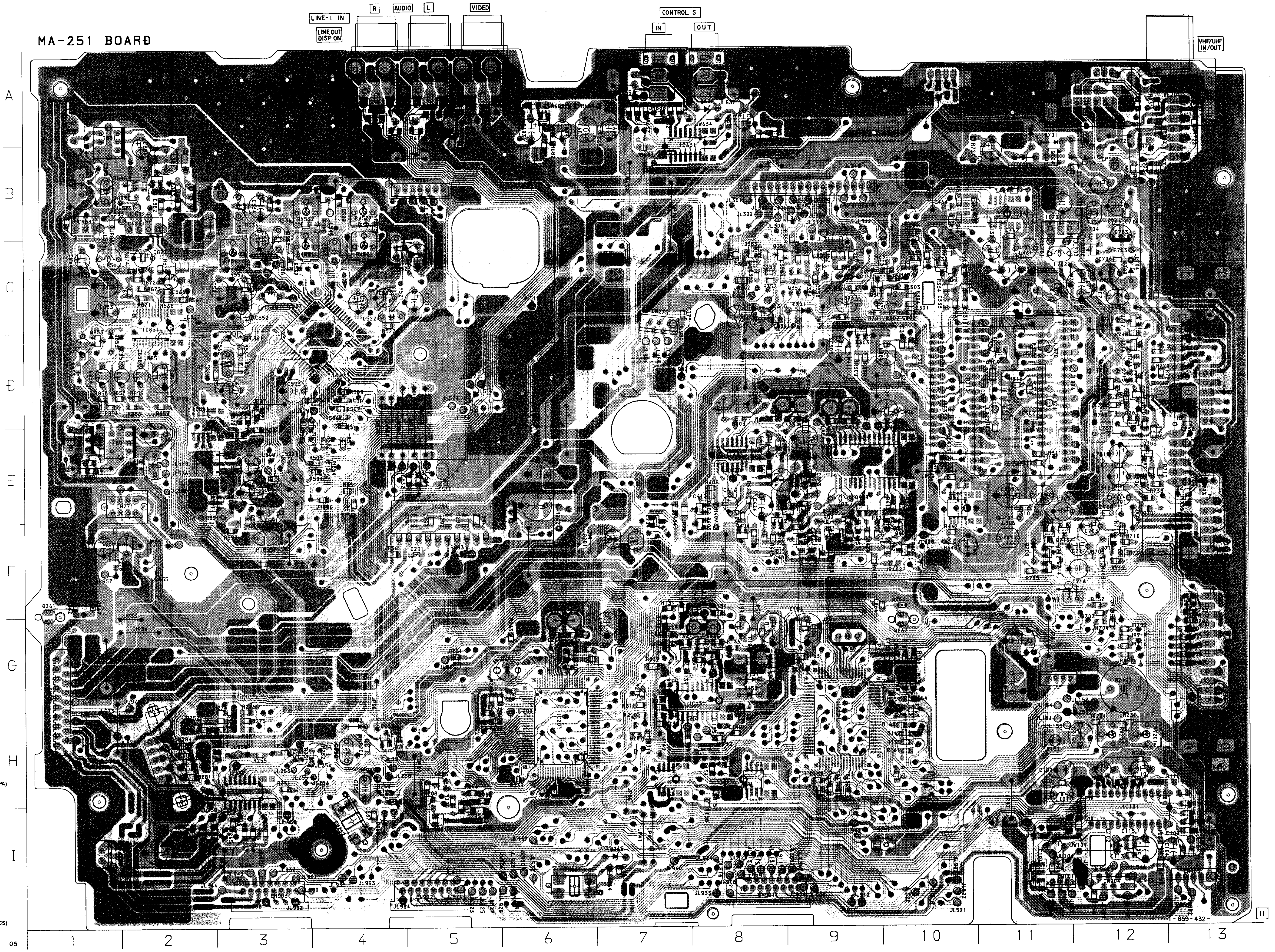
– Ref. No.: MA-251 Board; 3,000 series, DC-68/77 Board; 1,000 series –


CN1
CN2
05
11
(11)

DC-68 BOARD: 1-659-441-
DC-69 BOARD: 1-659-454-
DC-77 BOARD: 1-659-448-
DC-78 BOARD: 1-659-460-

MA251 BOARD

CN101	I-11
CN271	E-2
CN275	C-7
CN281	H-2
CN291	I-1
CN301	B-9
CN501	B-5
CN851	B-2
CN881	B-1
CN901	I-8
CN902	I-5
CN903	I-3
CN906	G-1
CN907	G-11
D151	G-8
D152	G-8
D201	F-6
D202	H-7
D251	H-3
D261	G-6
D265	I-7
D267	I-4
D291	F-5
D301	C-9
D402	F-8
D403	F-8
D591	E-3
D610	A-5
D631	A-7
D632	A-8
D633	A-8
D635	A-7
D701	B-11
D702	C-12
D703	C-12
D902	H-4
IC101	I-12
IC131	G-8
IC151	H-9
IC152	H-7
IC153	H-8
IC201	H-6
IC251	H-3
IC291	E-5
IC302	D-11
IC401	E-9
IC402	E-8
IC461	B-11
IC501	D-4
IC551	D-2
IC631	B-7
IC701	D-11
Q131	G-8
Q132	G-7
Q201	I-5
Q202	H-4
Q261	F-1
Q262	G-10
Q263	E-6
Q301	C-9
Q306	D-11
Q352	C-9
Q353	C-8
Q402	E-8
Q404	F-8
Q406	F-9
Q407	F-10
Q413	E-9
Q591	E-3
Q592	E-2
Q681	A-6
Q701	E-12
Q703	C-12
Q705	E-12
Q707	D-12
Q708	D-12
Q709	E-12
Q715	D-12
Q716	D-12
Q717	C-12
Q881	B-2
Q882	B-2
Q886	B-2
Q891	E-1
Q892	E-2


MA-251 BOARD
LINE-1 IN
LINE OUT DISP ON
R
AUDIO
L
VIDEO
CONTROL S
IN
OUT
VHF/UHF IN/OUT
A
B
C
D
E
F
G
H
I
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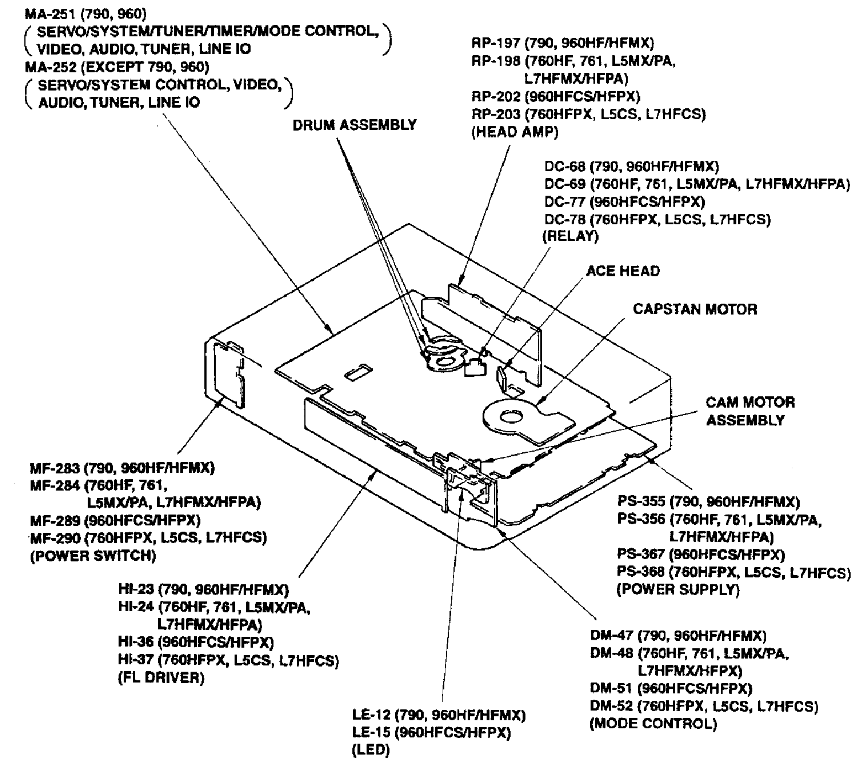
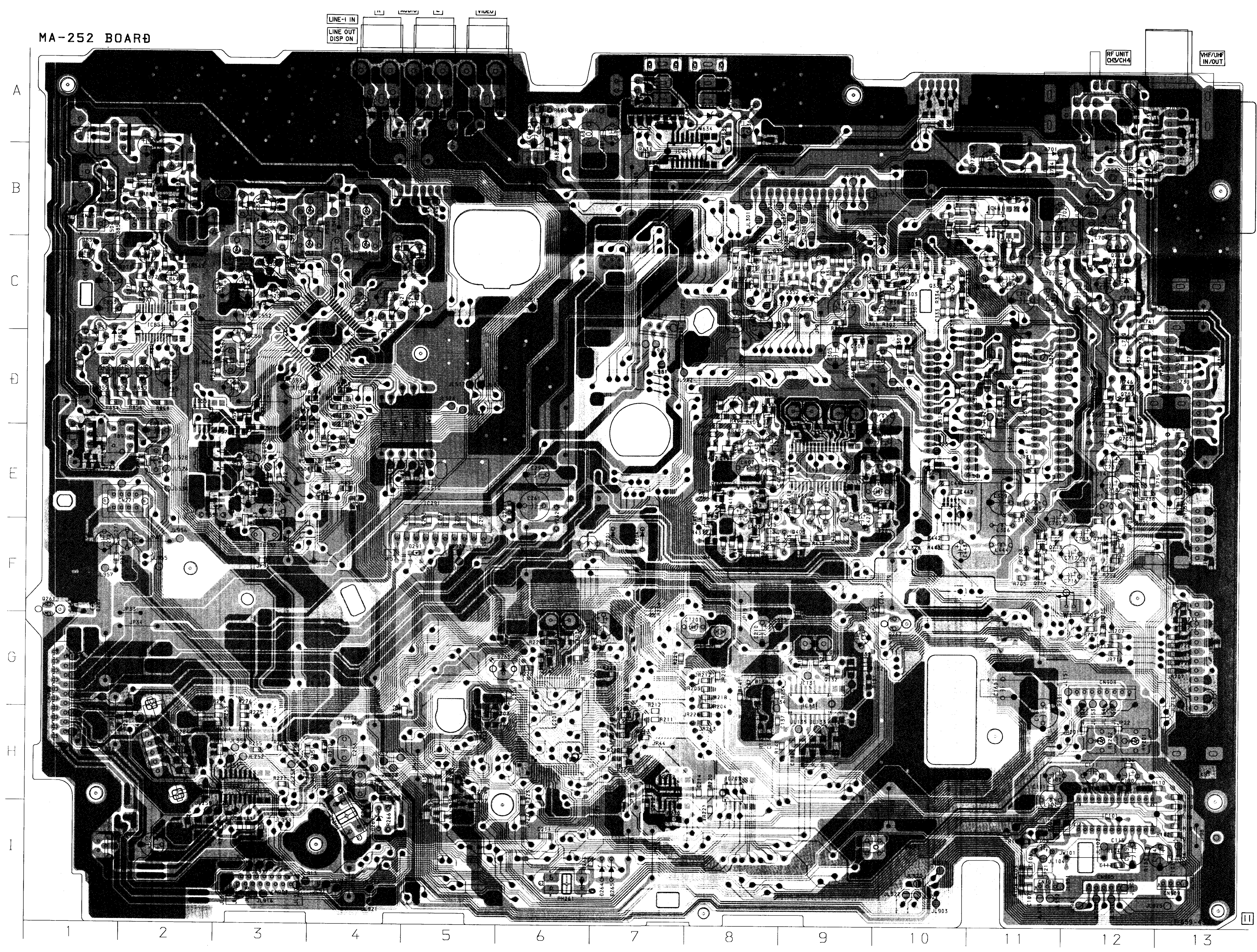
12
13
1-659-432-
11
05


MA-251 (790, 960)
(SERVO/SYSTEM/TUNER/TIMER/MODE CONTROL, VIDEO, AUDIO, TUNER, LINE IO)
MA-252 (EXCEPT 790, 960)
(SERVO/SYSTEM CONTROL, VIDEO, AUDIO, TUNER, LINE IO)
DRUM ASSEMBLY
RP-197 (790, 960HF/HFMX)
RP-198 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
RP-202 (960HFCS/HFPX)
RP-203 (760HFPX, L5CS, L7HFCS)
(HEAD AMP)
DC-68 (790, 960HF/HFMX)
DC-69 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
DC-77 (960HFCS/HFPX)
DC-78 (760HFPX, L5CS, L7HFCS)
(RELAY)
ACE HEAD
CAPSTAN MOTOR
CAM MOTOR ASSEMBLY
MF-283 (790, 960HF/HFMX)
MF-284 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
MF-289 (960HFCS/HFPX)
MF-290 (760HFPX, L5CS, L7HFCS)
(POWER SWITCH)
PS-355 (790, 960HF/HFMX)
PS-356 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
PS-367 (960HFCS/HFPX)
PS-368 (760HFPX, L5CS, L7HFCS)
(POWER SUPPLY)
HI-23 (790, 960HF/HFMX)
HI-24 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
HI-36 (960HFCS/HFPX)
HI-37 (760HFPX, L5CS, L7HFCS)
(FL DRIVER)
DM-47 (790, 960HF/HFMX)
DM-48 (760HF, 761, L5MX/PA, L7HFMX/HFPX)
DM-51 (960HFCS/HFPX)
DM-52 (760HFPX, L5CS, L7HFCS)
(MODE CONTROL)
LE-12 (790, 960HF/HFMX)
LE-15 (960HFCS/HFPX)
(LED)

SERVO/SYSTEM/TUNER/TIMER/MODE CONTROL, VIDEO, AUDIO, IO, TUNER
MA-251, DC-68/77


MA-252 BOARD
LINE-1 IN
LINE OUT
DISP ON
R
AUDIO
L
VIDEO
RF UNIT
CH3/CH4
VHF/UHF
IN/OUT
A
B
C
D
E
F
G
H
I
1
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3
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9
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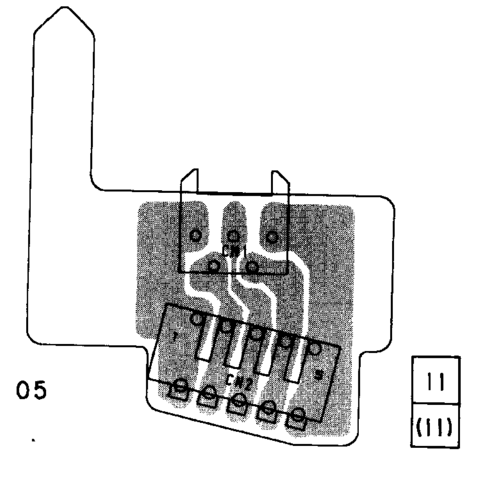
11
12
13
11

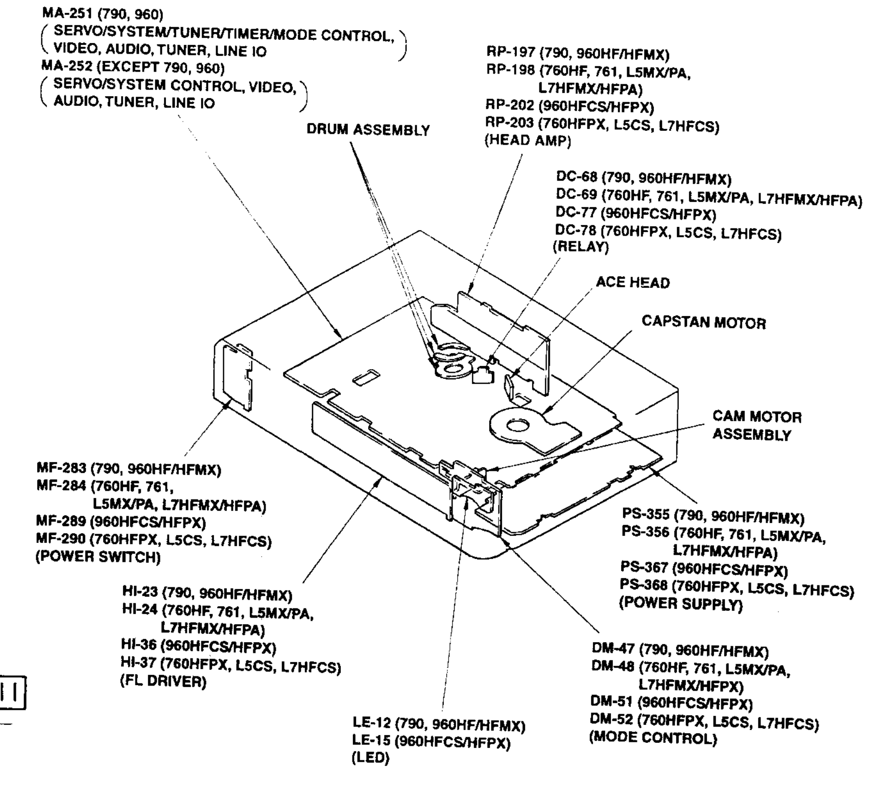
MA252 BOARD

CN101	I-11
CN271	E-2
CN275	C-7
CN281	H-2
CN291	I-1
CN301	B-9
CN501	B-5
CN851	B-2
CN881	B-1
CN903	I-3
CN905	I-12
CN906	G-1
CN908	G-12
D201	F-7
D202	H-7
D203	H-5
D204	F-7
D251	H-3
D261	G-6
D265	I-7
D267	I-4
D291	F-5
D403	E-10
D591	E-3
D610	A-5
D701	B-11
D702	C-12
D703	C-12
D708	F-11
D853	D-1
D902	H-4
IC101	I-12
IC131	G-9
IC201	H-6
IC202	H-7
IC203	H-8
IC251	H-3
IC291	E-5
IC302	D-11
IC401	E-9
IC461	B-11
IC501	D-4
IC551	D-2
IC701	B-11
IC851	C-2
Q131	G-8
Q132	G-9
Q201	I-5
Q202	H-5
Q261	F-1
Q262	G-10
Q263	E-6
Q301	C-9
Q306	D-11
Q352	C-9
Q353	C-8
Q404	E-8
Q405	F-9
Q406	E-8
Q591	E-3
Q592	E-2
Q681	A-6
Q701	E-12
Q703	C-12
Q705	E-12
Q707	D-12
Q708	D-12
Q709	E-12
Q710	F-12
Q711	F-11
Q714	F-11
Q853	D-1
Q881	B-2
Q882	B-2
Q886	B-2

DC-68/69/77/78 BOARD


CN1
CN2
1
5
05
11
(11)

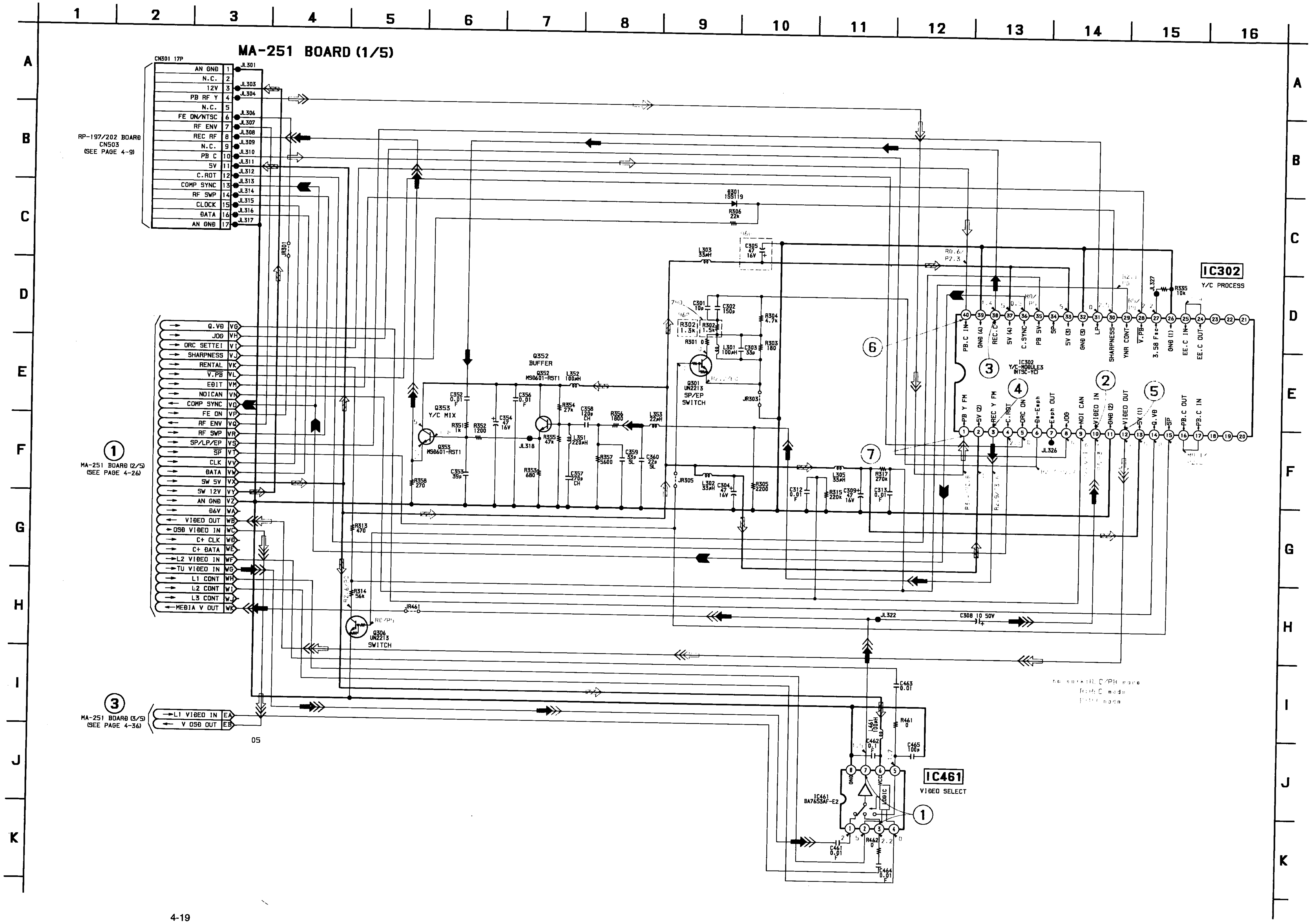
DC-68 BOARD: 1-659-441-
DC-69 BOARD: 1-659-454-
DC-77 BOARD: 1-659-448-
DC-78 BOARD: 1-659-460-


MA-251 (790, 960)
(SERVO/SYSTEM/TUNER/TIMER/MODE CONTROL, VIDEO, AUDIO, TUNER, LINE IO)
MA-252 (EXCEPT 790, 960)
(SERVO/SYSTEM CONTROL, VIDEO, AUDIO, TUNER, LINE IO)
DRUM ASSEMBLY
RP-197 (790, 960HF/HFMX)
RP-198 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
RP-202 (960HFCS/HFPX)
RP-203 (760HFPX, L5CS, L7HFCS)
(HEAD AMP)
DC-68 (790, 960HF/HFMX)
DC-69 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
DC-77 (960HFCS/HFPX)
DC-78 (760HFPX, L5CS, L7HFCS)
(RELAY)
ACE HEAD
CAPSTAN MOTOR
CAM MOTOR ASSEMBLY
MF-283 (790, 960HF/HFMX)
MF-284 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
MF-289 (960HFCS/HFPX)
MF-290 (760HFPX, L5CS, L7HFCS)
(POWER SWITCH)
PS-355 (790, 960HF/HFMX)
PS-356 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
PS-367 (960HFCS/HFPX)
PS-368 (760HFPX, L5CS, L7HFCS)
(POWER SUPPLY)
HI-23 (790, 960HF/HFMX)
HI-24 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
HI-36 (960HFCS/HFPX)
HI-37 (760HFPX, L5CS, L7HFCS)
(FL DRIVER)
DM-47 (790, 960HF/HFMX)
DM-48 (760HF, 761, L5MX/PA, L7HFMX/HFPX)
DM-51 (960HFCS/HFPX)
DM-52 (760HFPX, L5CS, L7HFCS)
(MODE CONTROL)
LE-12 (790, 960HF/HFMX)
LE-15 (960HFCS/HFPX)
(LED)

SERVO/SYSTEM CONTROL, VIDEO, AUDIO, IO, TUNER
MA-252, DC-69/78

MA-251 (VIDEO) (SLV-790/960) SCHEMATIC DIAGRAM • See page 4-13 to 4-15 for printed wiring board.

– Ref. No.: MA-251 Board; 3,000 series –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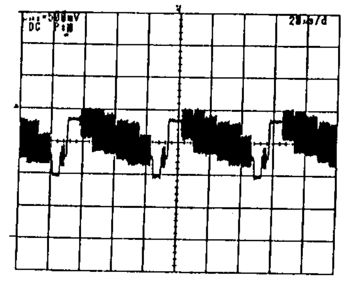
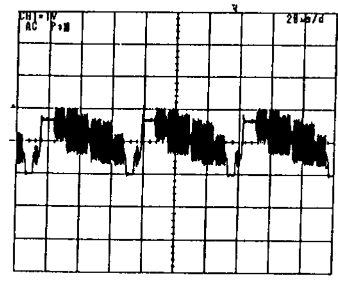
16
A
B
C
D
E
F
G
H
I
J
K
MA-251 BOARD (1/5)
CN301 17P
AN GND 1
N.C. 2
12V 3
PB RF Y 4
N.C. 5
FE ON/NTSC 6
RF ENV 7
REC RF 8
N.C. 9
PB C 10
5V 11
C.ROT 12
COMP SYNC 13
RF SWP 14
CLOCK 15
DATA 16
AN GND 17
JL301
JL303
JL304
JL306
JL307
JL308
JL309
JL310
JL311
JL312
JL313
JL314
JL315
JL316
JL317
RP-197/202 BOARD
CN503
(SEE PAGE 4-9)
Q.VD VG
JOG VH
ORC SETTEI VI
SHARPNESS VJ
RENTAL VK
V.PB VL
EDIT VM
NOICAN VN
COMP SYNC VO
FE ON VP
RF ENV VQ
RF SWP VR
SP/LP/EP VS
SP VT
CLK VV
DATA VW
SW 5V VX
SW 12V VY
AN GND VZ
D6V WA
VIDEO OUT WB
OSD VIDEO IN WC
C+ CLK WD
C+ DATA WE
L2 VIDEO IN WF
TU VIDEO IN WG
L1 CONT WH
L2 CONT WI
L3 CONT WJ
MEDIA V OUT WK
①
MA-251 BOARD (2/5)
(SEE PAGE 4-26)
③
MA-251 BOARD (3/5)
(SEE PAGE 4-36)
L1 VIDEO IN EA
V OSD OUT EB
05
JR301
D301
1SS119
R306
22k
L303
33μH
C305
47
16V
C301
10p
C302
150p
R302
1.3k
R302
1.5k
R301 0
R304
4.7k
L301
100μH
C303
33p
R303
180
Q301
UN2213
SP/EP
SWITCH
JR303
Q352
BUFFER
Q352
MSD601-RST1
L352
100μH
C352
0.01
F
C356
0.01
F
Q353
Y/C MIX
R351
1k
R352
1200
C354
47
16V
R354
27k
C358
120p
CH
R356
1800
L353
22μH
Q353
MSD601-RST1
JL318
R355
47k
L351
220μH
R357
5600
C359
33p
SL
C360
22p
SL
C353
39p
R353
680
C357
270p
CH
R358
270
JR305
L302
33μH
C304
47
16V
R305
2200
C312
0.01
F
R315
220k
C309
47
16V
L305
33μH
R317
270k
C313
0.01
F
R313
470
R314
56k
Q306
UN2213
SWITCH
JR461
JL322
C308 10 50V
C463
0.01
R461
0
L461
100μH
C462
0.1
F
C465
100p
IC461
BA7653AF-E2
GND
VCC
LOGIC
C461
0.01
F
R462
0
C464
0.01
F
IC461
VIDEO SELECT
IC302
Y/C PROCESS
IC302
Y/C-MODULE3
(NTSC-YC)
JL327
R335
10k
JL326
PB.C IN
GND (4)
REC.C
5V (4)
C.SYNC
PB 5V
SP
5V (3)
GND (3)
LP
SHARPNESS
YNR CONT
V.PB
3.58 Fsc
GND (1)
EE.C IN
EE.C OUT
PB Y FM
5V (2)
REC Y FM
C.ROT
ORC ON
De-Emph
Emph OUT
JOG
NOI CAN
VIDEO IN
GND (2)
VIDEO OUT
5V (1)
Q.VD
SP
PB.C OUT
PB.C IN
R0.6/
P2.3
②
③
④
⑤
⑥
⑦
①

• **Waveforms**

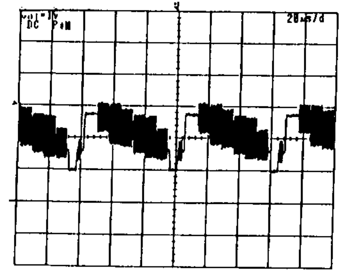
❶ IC461 ③, ⑦ REC
1.1Vp-p (H)



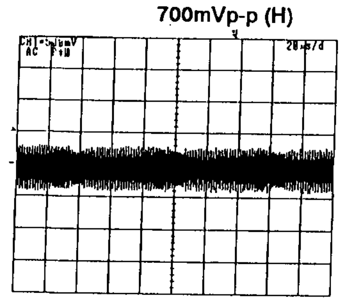
❺ IC302 ⑫ PB
2Vp-p (H)



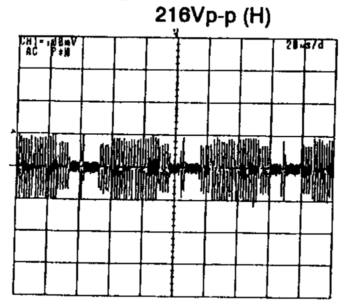
❷ IC302 ⑩ REC
2.2Vp-p (H)



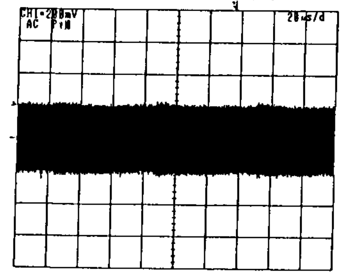
❻ IC302 ㊵ PB
700mVp-p (H)



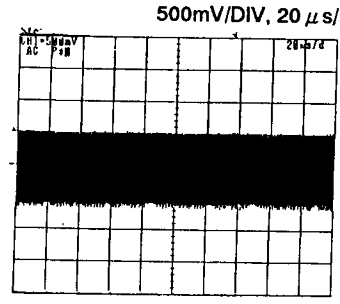
❸ IC302 ㊳ REC
216Vp-p (H)



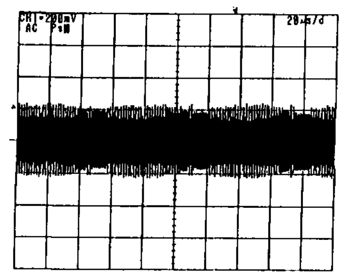
❼ IC302 ① PB
400Vp-p (H)



❹ IC302 ③ REC
500mV/DIV, 20 μs/DIV



❽ Q353 Ⓔ 460mVp-p (H)



- Signal path

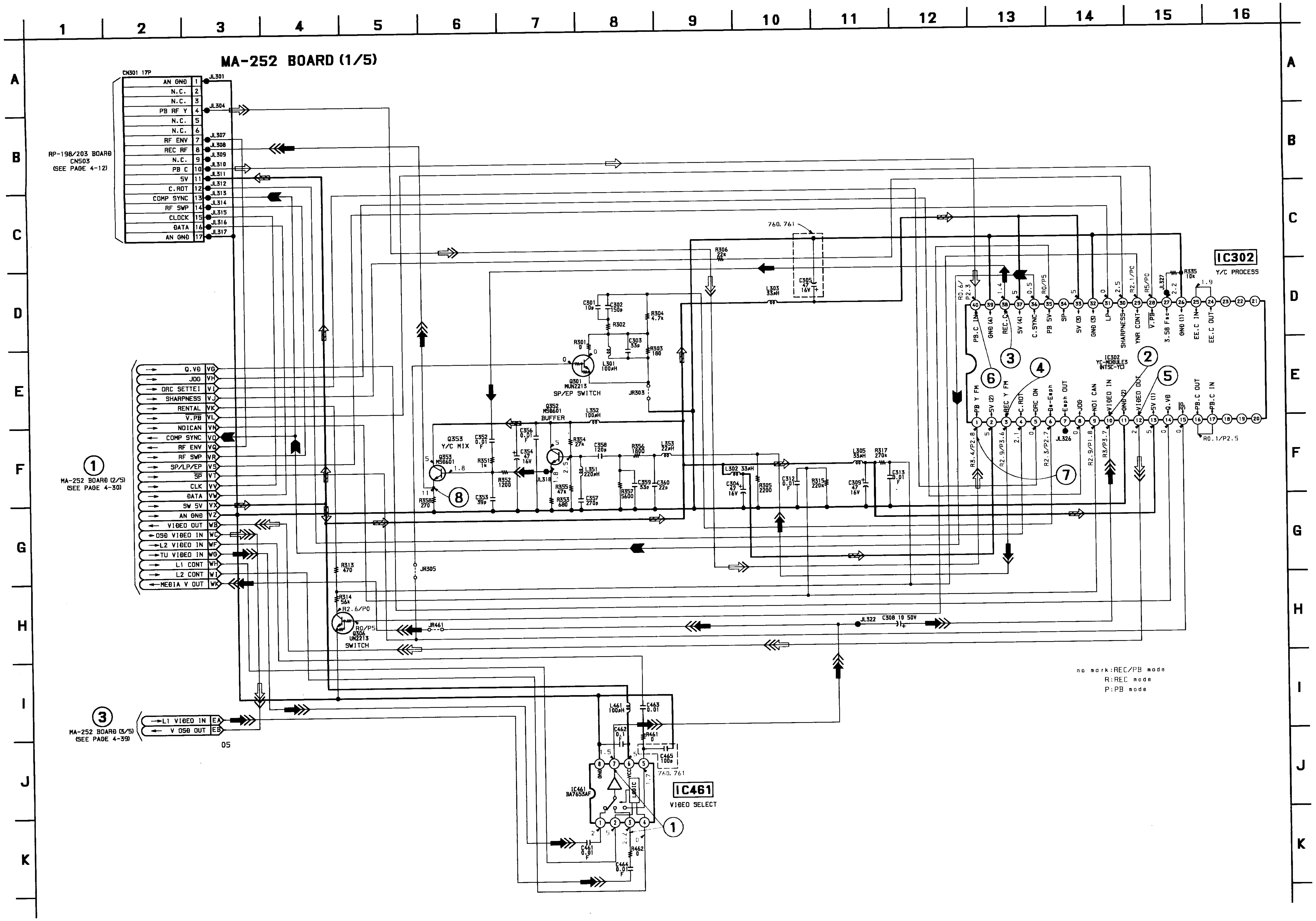
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡≫	➡⋙
PB	⇨	⇨≫	⇨⋙

- Signal path

	REC	REC/PB	PB
Ref. signal	➧	➩	⇨

MA-252 (VIDEO) (SLV-760/761/L5/L7) SCHEMATIC DIAGRAM • See page 4-16 to 4-18 for printed wiring board.

– Ref. No.: MA-252 Board; 4,000 series –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16
A
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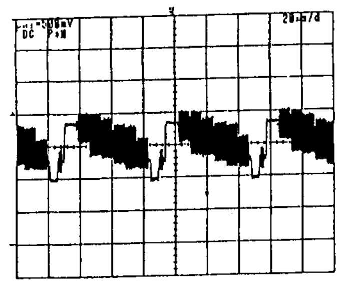
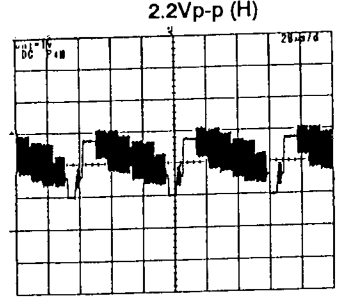
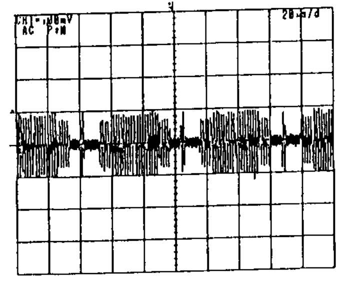
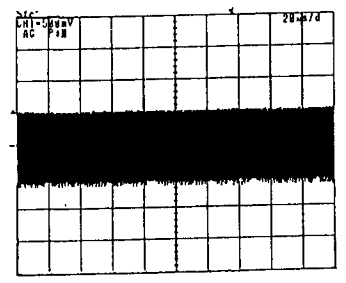
C
D
E
F
G
H
I
J
K
MA-252 BOARD (1/5)
CN301 17P
AN GND 1
N.C. 2
N.C. 3
PB RF Y 4
N.C. 5
N.C. 6
RF ENV 7
REC RF 8
N.C. 9
PB C 10
5V 11
C.ROT 12
COMP SYNC 13
RF SWP 14
CLOCK 15
DATA 16
AN GND 17
RP-198/203 BOARD CN503 (SEE PAGE 4-12)
Q.VD VG
JOG VH
DRC SETTEI VJ
SHARPNESS VJ
RENTAL VK
V.PB VL
NOICAN VN
COMP SYNC VQ
RF ENV VP
RF SWP VR
SP/LP/EP VS
SP VT
CLK VV
DATA VW
SW 5V VX
AN GND VZ
VIDEO OUT WB
OSD VIDEO IN WC
L2 VIDEO IN WF
TU VIDEO IN WG
L1 CONT WH
L2 CONT WI
MEDIA V OUT WK
①
MA-252 BOARD (2/5) (SEE PAGE 4-30)
③
MA-252 BOARD (3/5) (SEE PAGE 4-39)
L1 VIDEO IN EA
V OSD OUT EB
IC302
Y/C PROCESS
IC302 YC-MODULE3 (NTSC-YC)
Q301 MUN2213 SP/EP SWITCH
Q352 M5B601 BUFFER
Q353 M5B601 Y/C MIX
Q304 UN2213 SWITCH
IC461 BA7653AF
IC461
VIDEO SELECT
760, 761
no mark:REC/PB mode
R:REC mode
P:PB mode

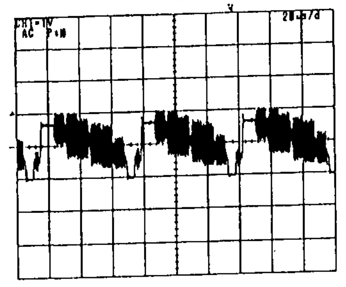
• Waveforms

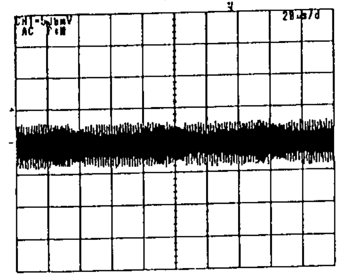

❶ IC461 ③, ⑦ REC 1.1Vp-p (H)

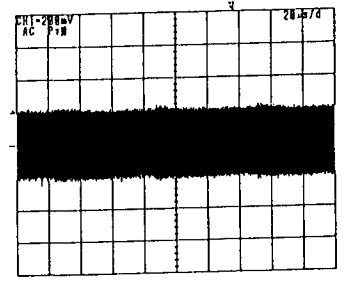

❷ IC302 ⑩ REC 2.2Vp-p (H)

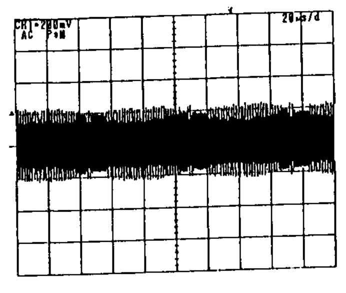

❸ IC302 ㉘ REC 216Vp-p (H)


❹ IC302 ③ REC 500mV/DIV, 20μs/DIV


❺ IC302 ⑫ PB 2Vp-p (H)


❻ IC302 ㊵ PB 700mVp-p (H)


❼ IC302 ① PB 400Vp-p (H)


❽ Q353 Ⓔ 460mVp-p (H)

- Signal path

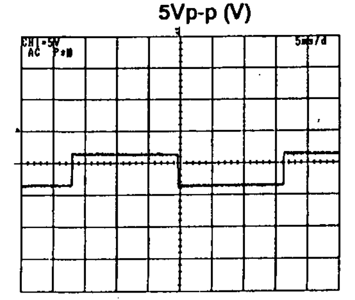
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡⇨	➡➡⇨
PB	⇨	⇨⇨	⇨⇨⇨

- Signal path

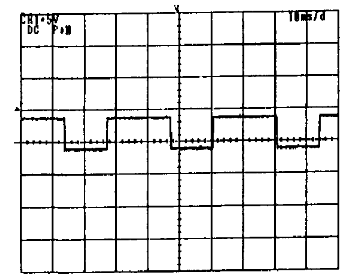
	REC	REC/PB	PB
Ref. signal	➧	➧	▷

• Waveforms

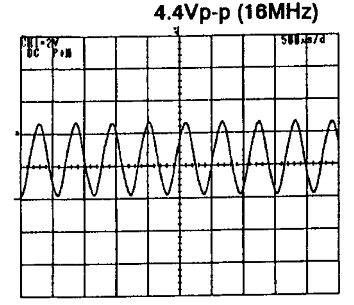
❶ IC201 ① REC/PB
5Vp-p (V)



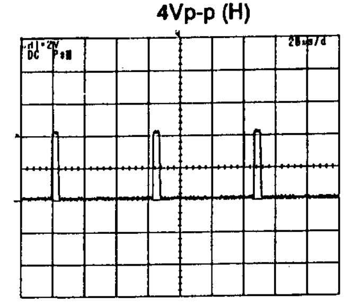
❷ IC201 ⑦ REC
5Vp-p (2V)



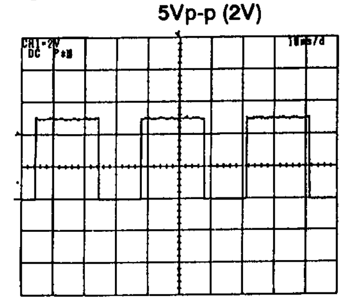
❸ IC201 ㊷ REC/PB
4.4Vp-p (16MHz)



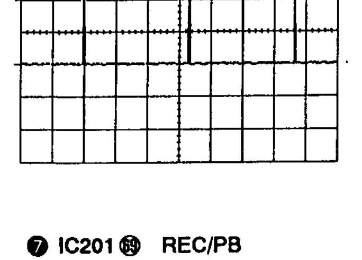
❹ IC201 (66) REC/PB
4Vp-p (H)



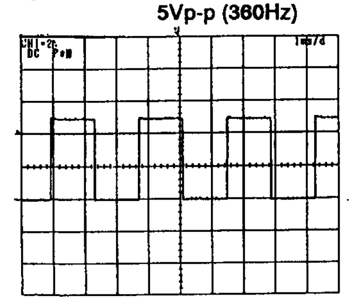
❺ IC201 (67) PB
5Vp-p (2V)



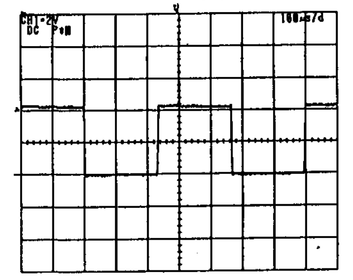
❻ IC201 (68) REC/PB
5Vp-p (2V)



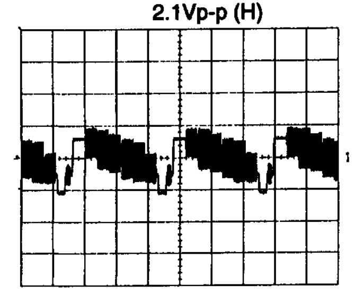
❼ IC201 (69) REC/PB
5Vp-p (360Hz)



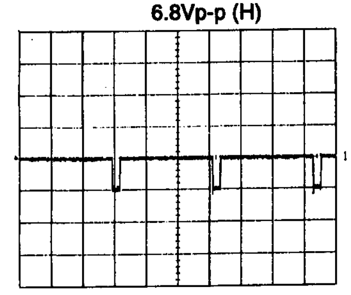
❽ IC201 (70) REC/PB
4.2Vp-p (2.16kHz)



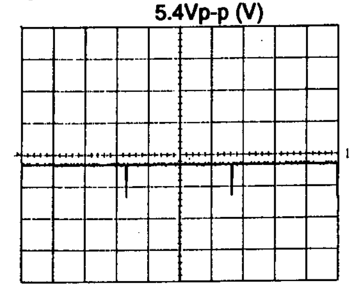
❾ IC401 ③ REC/PB
2.1Vp-p (H)



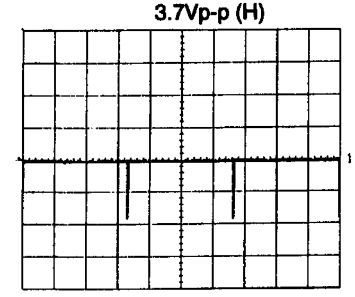
❿ C401 ⑩ REC/PB
6.8Vp-p (H)



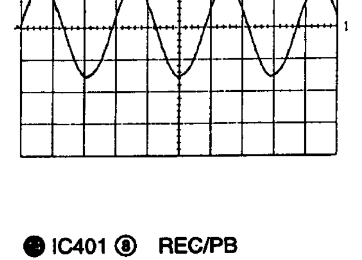
⓫ IC401 ⑪ REC/PB
5.4Vp-p (V)



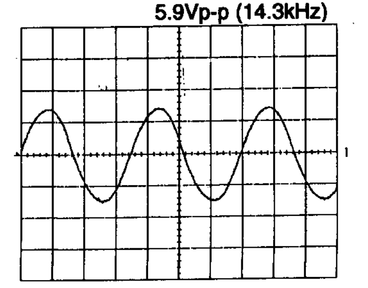
⓬ IC401 ⑬ REC/PB
3.7Vp-p (H)



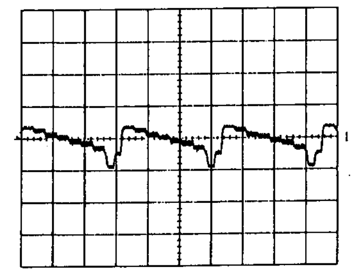
⓭ IC401 ⑮ REC/PB
5.8Vp-p (6.85MHz)



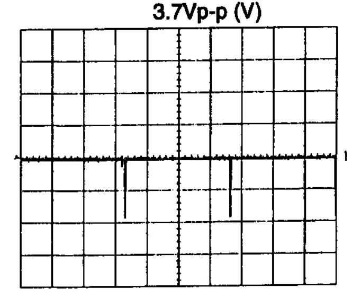
⓮ IC401 ⑧ REC/PB
5.9Vp-p (14.3kHz)



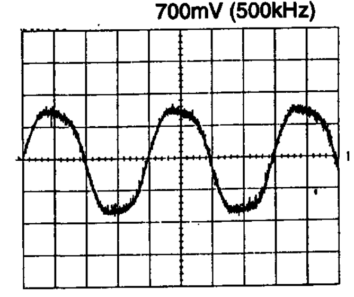
⓯ IC402 ② REC/PB
1.3Vp-p (H)



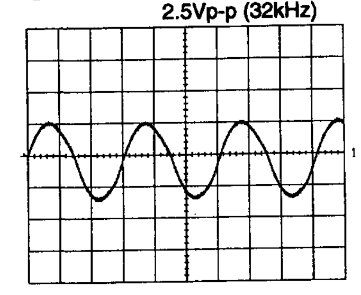
⓰ IC402 ⑤ REC/PB
3.7Vp-p (V)



⓱ IC402 ⑩ REC/PB
700mV (500kHz)



⓲ IC151 (74) REC/PB
2.5Vp-p (32kHz)



MA-251 (SERVO/SYSTEM/TUNER/TIMER/MODE CONTROL) (SLV-790/960), DC-68/77 (REALY) SCHEMATIC DIAGRAM

• See page 4-13 to 4-15 for printed wiring board.

– Ref. No.: MA-251 Board; 3,000 series, DC-68/77 Board; 1,000 series –

MA-251 BOARD (2/5)
MA-251 BOARD (5/5)
IC401
IC402
IC201 SERVO/SYSTEM CONTROL
IC151 TUNER/TIMER/MODE CONTROL
IC153 EEP ROM
IC152
IC101 CTL REC/PB CONTROL
IC251
IC291
IC631
IC131
DC-68 BOARD
DC-77 BOARD
CAM ENCODER

• Signal path

	VIDEO SIGNAL Y/CHROMA	AUDIO SIGNAL
REC	➡≫	➡
PB	⇨≫	⇨

• Signal path

	REC	REC/PB	PB
Drum speed servo		▻	
Drum phase servo		▻>	
Drum servo (speed and phase)		▻≫	
Capstan speed servo		▭	
Capstan servo (speed and phase)		▭≫	
Ref. signal	➤		⊃

SERVO/SYSTEM/TUNER/TIMER/MODE CONTROL
MA-251, DC-68/77

MA-252 (SERVO/SYSTEM CONTROL) (SLV-760/761/L5/L7), DC-69/78 (REALY) SCHEMATIC DIAGRAM

– Ref. No.: MA-252 Board; 4,000 series, DC-69/78 Board; 1,000 series –

- **See page 4-16 to 4-18 for printed wiring board.**

MA-252 BOARD (2/5)
IC201 SERVO/SYSTEM CONTROL
IC401 OSD
IC203 EEP ROM
IC202 POWER FAIL SET RESET PULSE GENERATOR
IC101 CTL REC/PB CONTROL
IC291 CAM/LOAD MOTOR DRIVE
IC251 WAVE SHAPER/CAPSTAN MOTOR ERROR INTEGRATION
CAM ENCODER
DC-69 BOARD
DC-78 BOARD
MA-252 BOARD (5/5)
IC131 EDS DATA SLICER
CTL HEAD
CHECK PIN

- Signal path

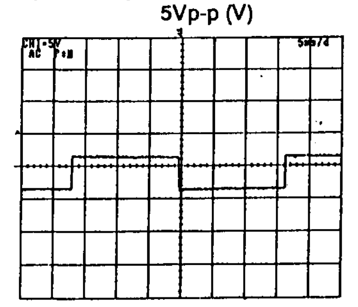
	VIDEO SIGNAL Y/CHROMA	AUDIO SIGNAL
REC	➡≫	➡
PB	⇨≫	⇨

- Signal path

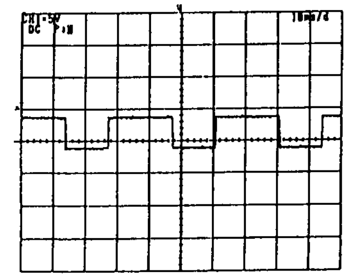
	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷>	
Drum servo (speed and phase)		▷≫	
Capstan speed servo		▷	
Capstan servo (speed and phase)		▷≫	
Ref. signal	➤		▷

- **Waveforms**

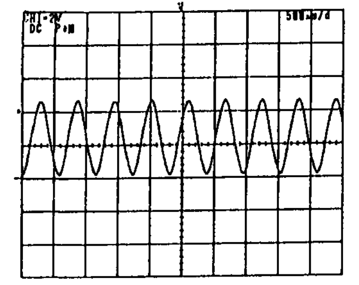
❶ IC201 ① REC/PB 5Vp-p (V)



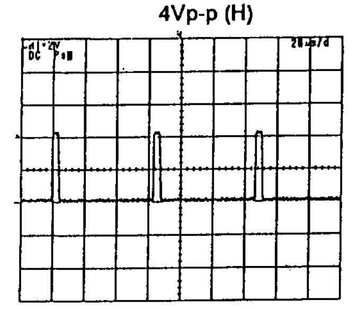
❷ IC201 ⑦ REC 5Vp-p (2V)



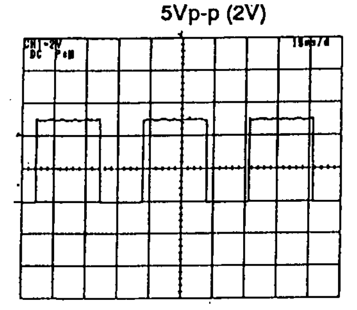
❸ IC201 ㊷ REC/PB 4.4Vp-p (16MHz)



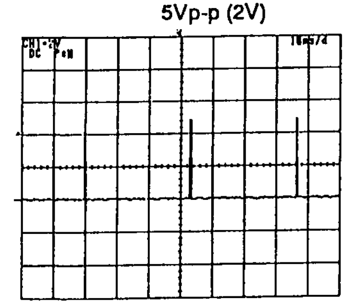
❹ IC201 (66) REC/PB 4Vp-p (H)



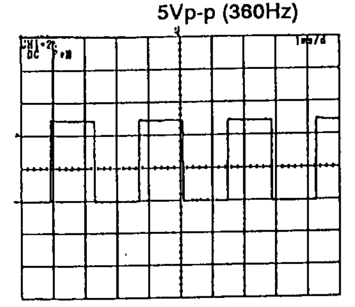
❺ IC201 (67) PB 5Vp-p (2V)



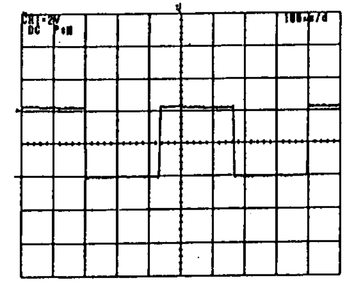
❻ IC201 (68) REC/PB 5Vp-p (2V)



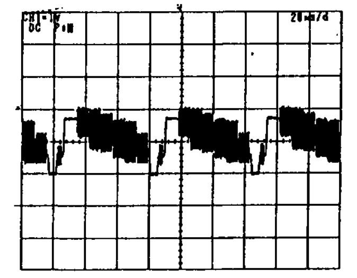
❼ IC201 (69) REC/PB 5Vp-p (360Hz)



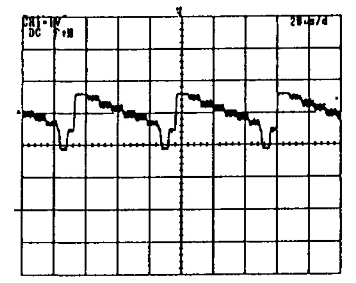
❽ IC201 (70) REC/PB 4.2Vp-p (2.16kHz)



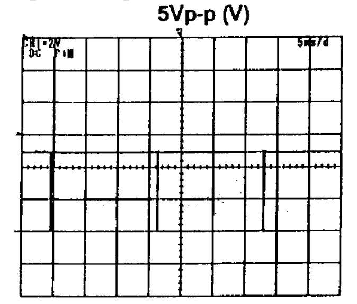
❾, ❿ IC401 ⑯, ⑱ REC/PB 2Vp-p (H)



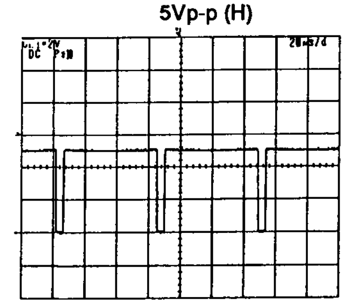
⓫ IC401 ⑳ 1.8Vp-p (H)



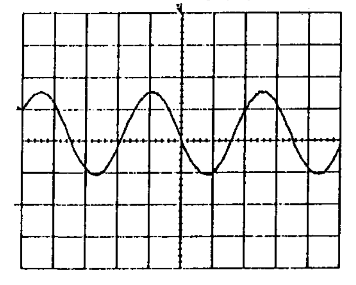
⓬ IC401 ⑦ REC/PB 5Vp-p (V)



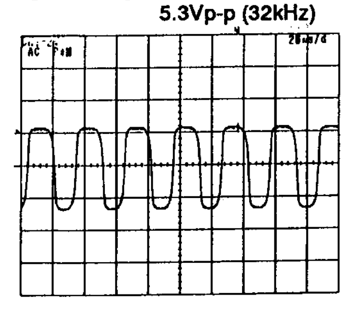
⓭ IC401 ④ REC/PB 5Vp-p (H)



⓮ IC401 ② REC/PB 2.6Vp-p (14.3MHz)

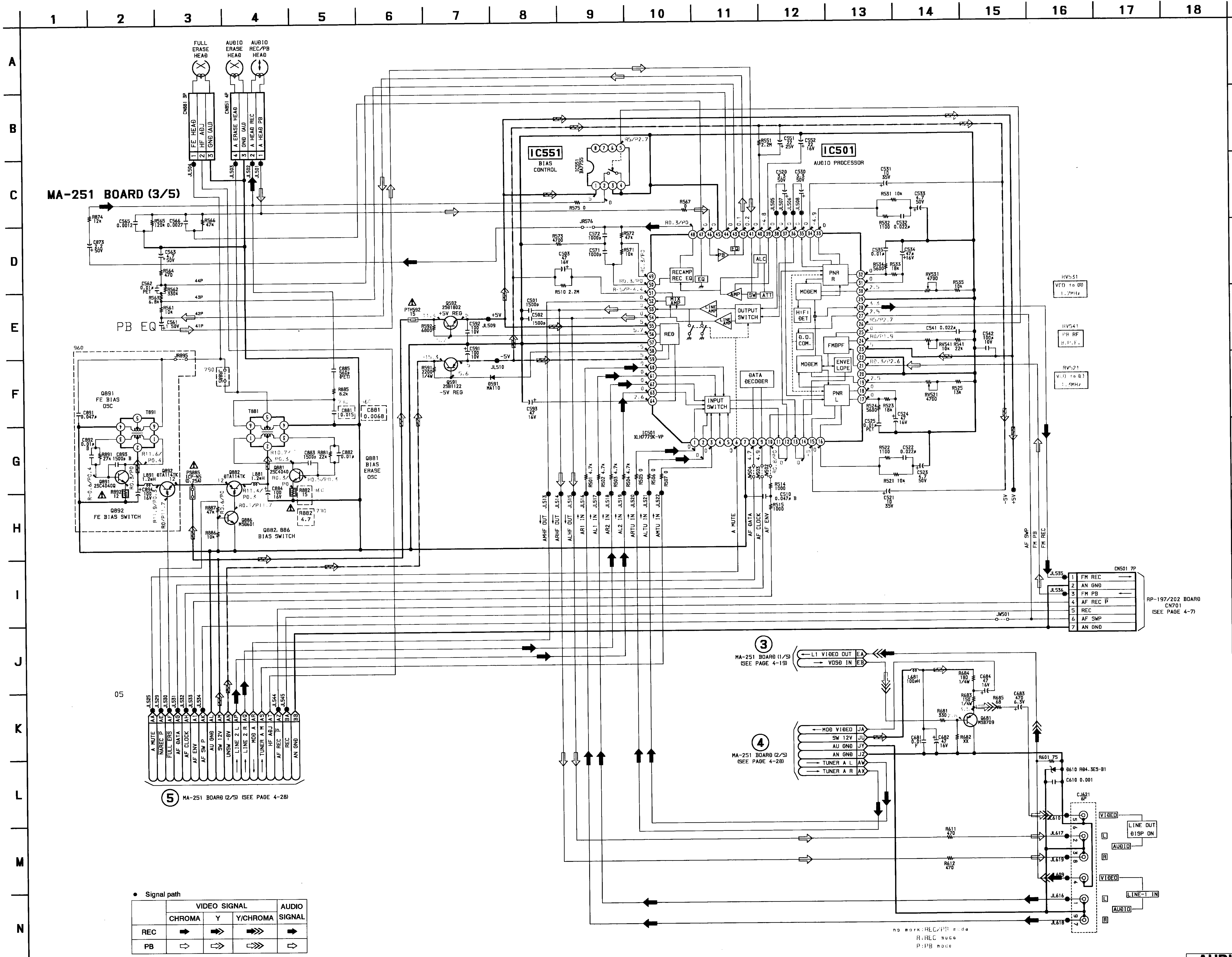


⓯ IC201 (87) REC/PB 5.3Vp-p (32kHz)



MA-251 (AUDIO, IO) (SLV-790/960) SCHEMATIC DIAGRAM • See page 4-13 to 4-15 for printed wiring board.

– Ref. No.: MA-251 Board; 3,000 series –

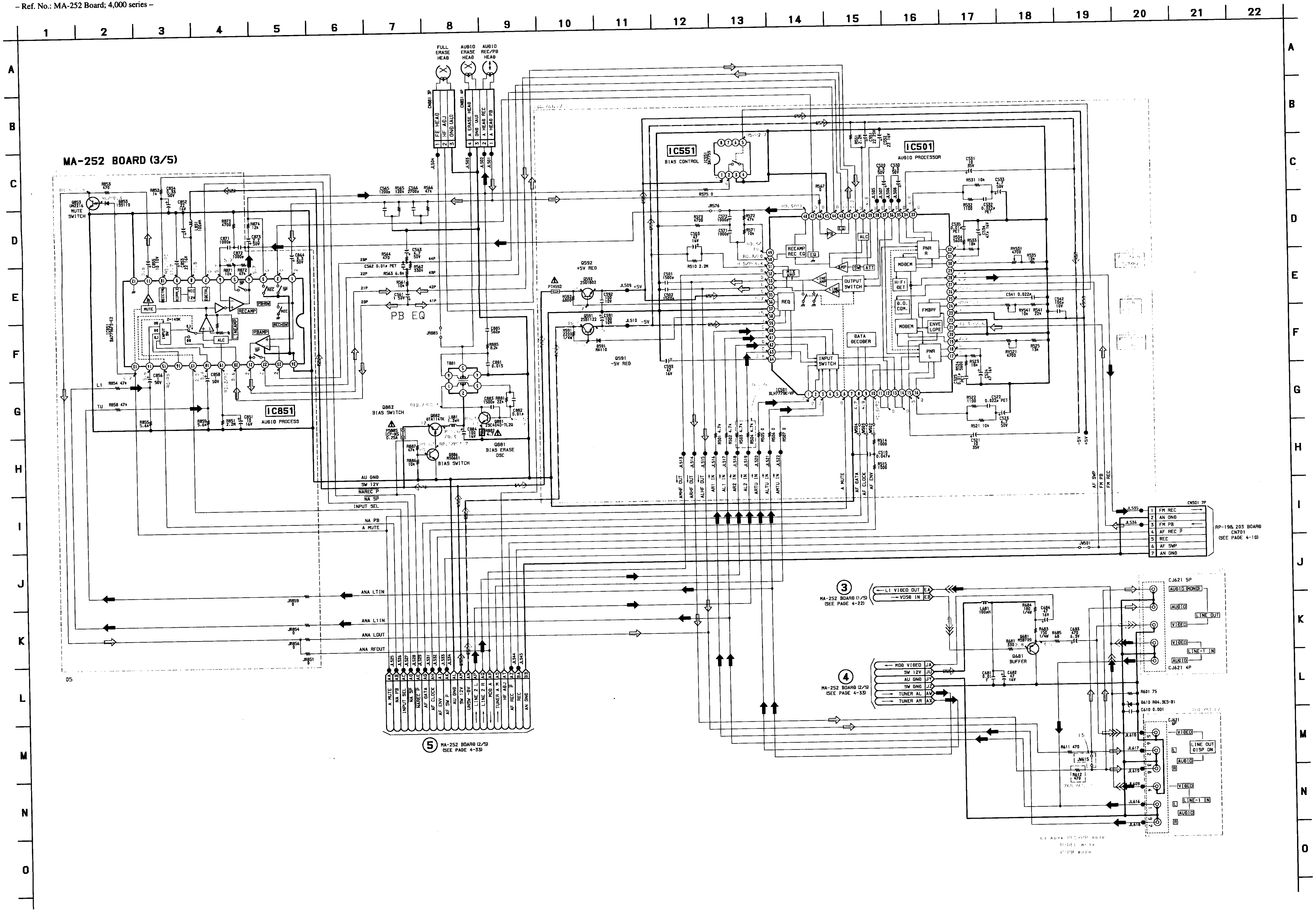

FULL ERASE HEAD
AUDIO ERASE HEAD
AUDIO REC/PB HEAD
CN881 3P
1 FE HEAD
2 HF ADJ
3 GND (AU)
CN851 4P
4 A ERASE HEAD
3 GND (AU)
2 A HEAD REC
1 A HEAD PB
MA-251 BOARD (3/5)
PB EQ
IC551 BIAS CONTROL
IC501 AUDIO PROCESSOR
IC501 XLH7779K-VP
Q592 2SB1802 +5V REG
Q591 2SB1122 -5V REG
Q891 FE BIAS OSC
T891
Q892 FE BIAS SWITCH
Q881 BIAS ERASE OSC
T881
Q882, 886 BIAS SWITCH
RECAMP REC EQ
EQ
PB
ALC
AMP
SW
ATT
MIX AMP
LINE AMP
OUTPUT SWITCH
REG
INPUT SWITCH
DATA DECODER
PNR R
PNR L
MODEM
HIFI DET
D.O. COM.
FMBPF
ENVELOPE
RV531 VCO (R) 1.7MHz
RV541 PB RF B.P.F.
RV521 VCO (L) 1.4MHz
AMHF OUT
ARHF OUT
ALHF OUT
AR1 IN
AL1 IN
AR2 IN
AL2 IN
ARTU IN
ALTU IN
AMTU IN
A MUTE
AF DATA
AF CLOCK
AF ENV
AF SWP
FM PB
FM REC
CN501 7P
1 FM REC
2 AN GND
3 FM PB
4 AF REC P
5 REC
6 AF SWP
7 AN GND
RP-197/202 BOARD CN701 (SEE PAGE 4-7)
③ MA-251 BOARD (1/5) (SEE PAGE 4-19)
L1 VIDEO OUT EA
VD50 IN EB
④ MA-251 BOARD (2/5) (SEE PAGE 4-28)
MOD VIDEO JA
SW 12V JL
AU GND JY
AN GND JZ
TUNER A L AW
TUNER A R AX
Q681 MSB709
CJ621 6P
VIDEO
L
R
LINE OUT DISP ON
AUDIO
LINE-1 IN
A MUTE
NAREC P
FULL ERS
AF DATA
AF CLOCK
AF ENV
AF SW P
AU GND
SW 12V
UNSW -8V
LINE 2 L
LINE 2 R
MOD A R
TUNER A M
HF ADJ
AF REC
REC
AN GND
⑤ MA-251 BOARD (2/5) (SEE PAGE 4-28)
960
790
05
no mark: REC/PB mode
R: REC mode
P: PB mode

• Signal path

	VIDEO SIGNAL			AUDIO
	CHROMA	Y	Y/CHROMA	SIGNAL
REC	➡	⇛	⇛⇛	➡
PB	⇨	⇨	⇨⇨	⇨

MA-252 (AUDIO, IO) (SLV-760/761/L5/L7) SCHEMATIC DIAGRAM • See page 4-16 to 4-18 for printed wiring board.

– Ref. No.: MA-252 Board; 4,000 series –


MA-252 BOARD (3/5)
FULL ERASE HEAD
AUDIO ERASE HEAD
AUDIO REC/PB HEAD
IC551 BIAS CONTROL
IC501 AUDIO PROCESSOR
IC851 AUDIO PROCESS
Q853 MUTE SWITCH
Q592 +5V REG
Q591 -5V REG
Q882 BIAS SWITCH
Q881 BIAS ERASE OSC
Q884 BIAS SWITCH
PB EQ
RECAMP REC EQ
OUTPUT SWITCH
INPUT SWITCH
DATA DECODER
PNR R
PNR L
MODEM
HIFI DET
FMBPF
ENVELOPE
Q681 BUFFER
CN501 7P
RP-198, 203 BOARD CN701 (SEE PAGE 4-10)
③ MA-252 BOARD (1/5) (SEE PAGE 4-22)
④ MA-252 BOARD (2/5) (SEE PAGE 4-33)
⑤ MA-252 BOARD (2/5) (SEE PAGE 4-33)
CJ621 5P
CJ621 4P
LINE OUT
LINE-1 IN
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
A B C D E F G H I J K L M N O

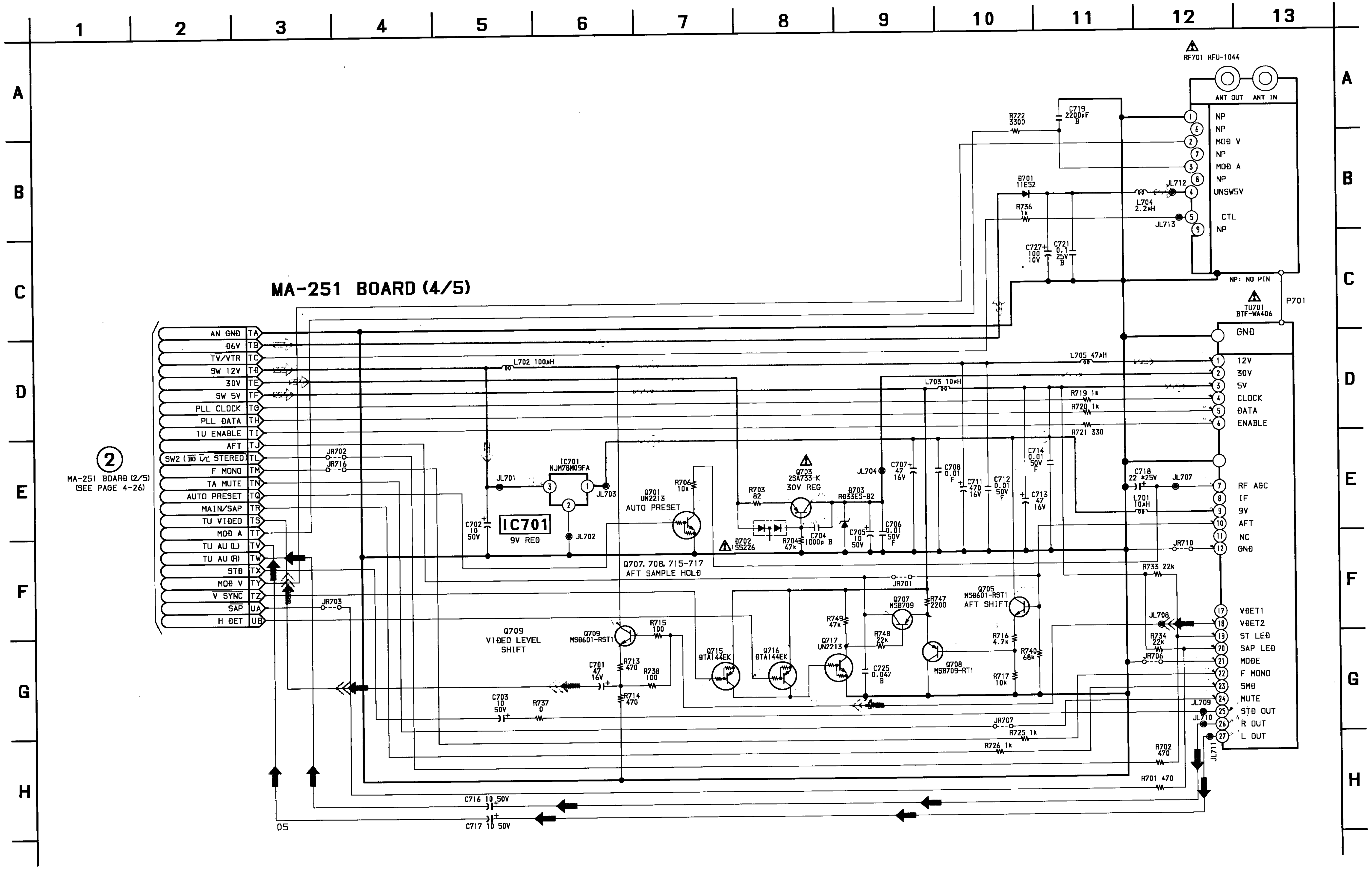
• Signal path

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	➡
PB	⇨	⇨⇨	⇨⇨⇨	⇨

MA-251 (TUNER) (SLV-790/960) SCHEMATIC DIAGRAM

• See page 4-13 to 4-15 for printed wiring board.

– Ref. No.: MA-251 Board; 3,000 series –


1
2
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7
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9
10
11
12
13
A
B
C
D
E
F
G
H
MA-251 BOARD (4/5)
② MA-251 BOARD (2/5) (SEE PAGE 4-26)
AN GND TA
Ð6V TB
TV/VTR TC
SW 12V TÐ
30V TE
SW 5V TF
PLL CLOCK TG
PLL ÐATA TH
TU ENABLE TI
AFT TJ
SW2 (BG L/L STEREO) TL
F MONO TM
TA MUTE TN
AUTO PRESET TQ
MAIN/SAP TR
TU VIÐEO TS
MOÐ A TT
TU AU (L) TV
TU AU (R) TW
STÐ TX
MOÐ V TY
V SYNC TZ
SAP UA
H ÐET UB
JR702
JR716
JR703
L702 100µH
IC701 NJM78M09FA
IC701 9V REG
JL701
JL702
JL703
C702 10 50V
Q701 UN2213 AUTO PRESET
R706 10k
R703 82
Q703 2SA733-K 30V REG
D703 RD33ES-B2
D702 1SS226
R704 47k
C704 1000p B
C705 10 50V
C706 0.01 50V F
JL704
C707 47 16V
C708 0.01 F
C711 470 16V
C712 0.01 50V F
C713 47 16V
C714 0.01 50V F
L703 10µH
L705 47µH
R719 1k
R720 1k
R721 330
Q707, 708, 715-717 AFT SAMPLE HOLD
JR701
Q707 MSB709
R747 2200
Q705 MSB601-RST1 AFT SHIFT
R749 47k
R748 22k
Q717 UN2213
Q708 MSB709-RT1
R716 4.7k
R740 68k
R717 10k
C725 0.047 B
Q715 DTA144EK
Q716 DTA144EK
Q709 VIDEO LEVEL SHIFT
Q709 MSB601-RST1
R715 100
R713 470
R738 100
R714 470
C701 47 16V
C703 10 50V
R737 0
JR707
R725 1k
R726 1k
R702 470
R701 470
C716 10 50V
C717 10 50V
05
R722 3300
C719 2200pF B
D701 11ES2
R736 1k
C727 100 10V
C721 0.1 25V B
L704 2.2µH
JL712
JL713
RF701 RFU-1044
ANT OUT
ANT IN
① NP
⑥ NP
② MOÐ V
⑦ NP
③ MOÐ A
⑧ NP
④ UNSW5V
⑤ CTL
⑨ NP
NP: NO PIN
P701
TU701 BTF-WA406
GNÐ
① 12V
② 30V
③ 5V
④ CLOCK
⑤ ÐATA
⑥ ENABLE
C718 22 *25V
JL707
L701 10µH
⑦ RF AGC
⑧ IF
⑨ 9V
⑩ AFT
⑪ NC
⑫ GNÐ
JR710
R733 22k
JL708
R734 22k
JR706
⑰ VÐET1
⑱ VÐET2
⑲ ST LEÐ
⑳ SAP LEÐ
㉑ MOÐE
㉒ F MONO
㉓ SMÐ
㉔ MUTE
㉕ STÐ OUT
㉖ R OUT
㉗ L OUT
JL709
JL710
JL711

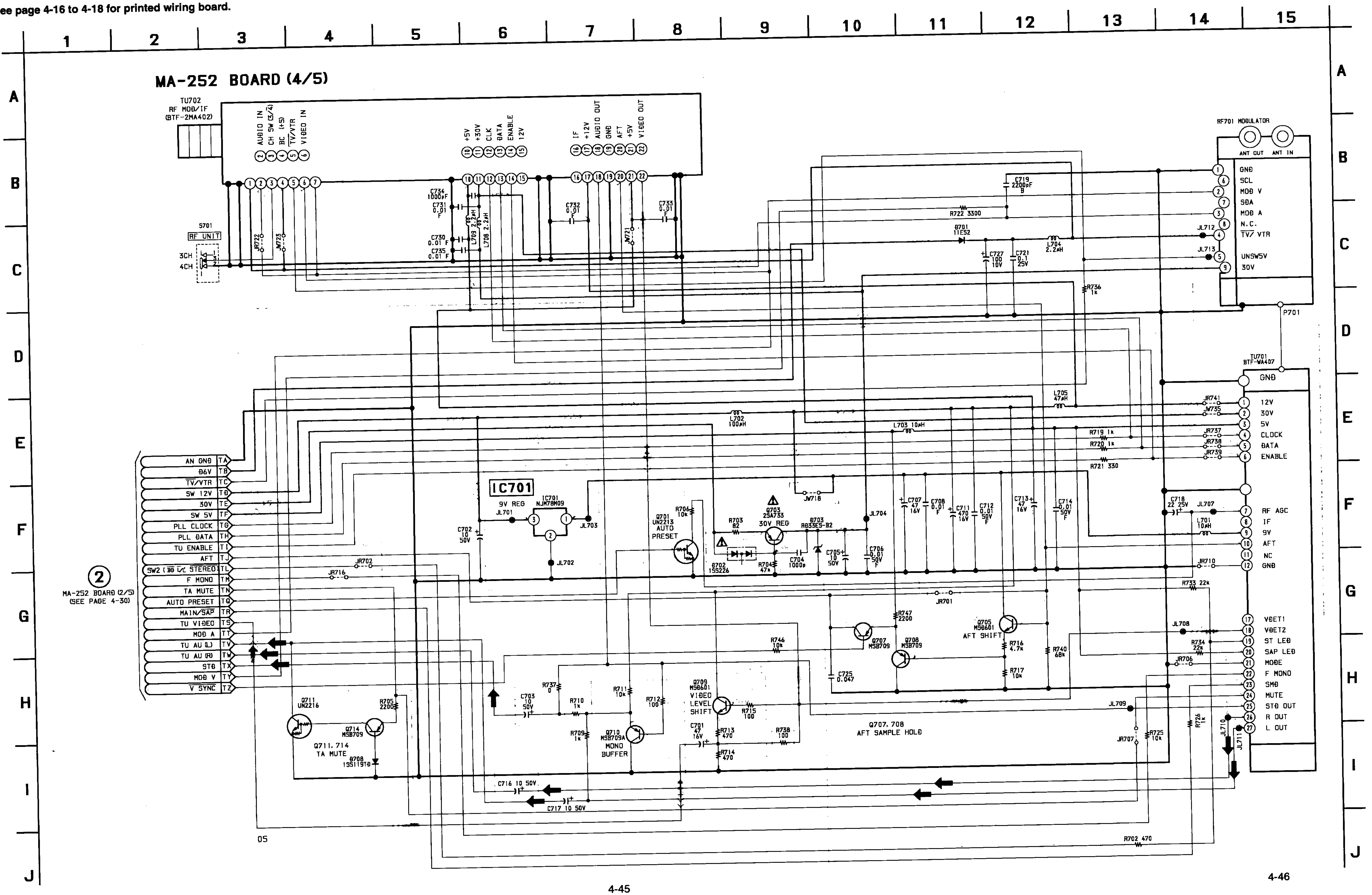
- Signal path

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	➡
PB	⇨	⇨	⇨	⇨

TUNE
MA-25

MA-252 (TUNER) (SLV-760/761/L5/L7) SCHEMATIC DIAGRAM • See page 4-16 to 4-18 for printed wiring board.

– Ref. No.: MA-252 Board; 4,000 series –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11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
MA-252 BOARD (4/5)
TU702
RF MOD/IF
(BTF-2MA402)
AUDIO IN
CH SW (3/4)
BC (+5)
TV/VTR
VIDEO IN
+5V
+30V
CLK
DATA
ENABLE
12V
IF
+12V
AUDIO OUT
GND
AFT
+5V
VIDEO OUT
S701
RF UNIT
3CH
4CH
JR722
JW723
C734
1000pF
C731
0.01
F
L709 2.2μH
L708 2.2μH
C730
0.01 F
C735
0.01 F
C732
0.01
F
JW721
C733
0.01
F
C719
2200pF
B
R722 3300
D701
11ES2
C727
100
10V
C721
0.1
25V
L704
2.2μH
R736
1k
RF701 MODULATOR
ANT OUT
ANT IN
GND
SCL
MOD V
SDA
MOD A
N.C.
TV/ VTR
UNSW5V
30V
JL712
JL713
P701
TU701
BTF-WA407
GND
12V
30V
5V
CLOCK
DATA
ENABLE
RF AGC
IF
9V
AFT
NC
GND
VDET1
VDET2
ST LED
SAP LED
MODE
F MONO
SMD
MUTE
STD OUT
R OUT
L OUT
JR741
JW735
JR737
JR738
JR739
L705
47μH
L702
100μH
L703 10μH
R719 1k
R720 1k
R721 330
C718
22 25V
JL707
L701
10μH
JR710
R733 22k
JL708
R734
22k
JR706
JL709
JR707
R725
10k
R726
1k
JL710
JL711
R702 470
AN GND TA
D6V TB
TV/VTR TC
SW 12V TD
30V TE
SW 5V TF
PLL CLOCK TG
PLL DATA TH
TU ENABLE TI
AFT TJ
SW2 (BG L/L STEREO) TL
F MONO TM
TA MUTE TN
AUTO PRESET TQ
MAIN/SAP TR
TU VIDEO TS
MOD A TT
TU AU (L) TV
TU AU (R) TW
STD TX
MOD V TY
V SYNC TZ
②
MA-252 BOARD (2/5)
(SEE PAGE 4-30)
JR702
JR716
IC701
9V REG
JL701
IC701
NJM78M09
JL703
JL702
C702
10
50V
Q701
UN2213
AUTO
PRESET
R706
10k
R703
82
Q703
2SA733
30V REG
D703
RD33ES-B2
D702
1SS226
R704
47k
C704
1000p
C705
10
50V
C706
0.01
50V
F
JW718
JL704
C707
47
16V
C708
0.01
F
C711
470
16V
C712
0.01
50V
F
C713
47
16V
C714
0.01
50V
F
JR701
R747
2200
Q705
MSD601
AFT SHIFT
Q707
MSB709
Q708
MSB709
R716
4.7k
R717
10k
R740
68k
C725
0.047
R746
10k
Q707, 708
AFT SAMPLE HOLD
Q709
MSD601
VIDEO
LEVEL
SHIFT
R715
100
C701
47
16V
R713
470
R714
470
R738
100
R711
10k
R712
100
R737
0
C703
10
50V
R710
1k
R709
1k
Q710
MSB709A
MONO
BUFFER
C716 10 50V
C717 10 50V
Q711
UN2216
R705
2200
Q714
MSB709
Q711, 714
TA MUTE
D708
1SS119TD
05

- Signal path

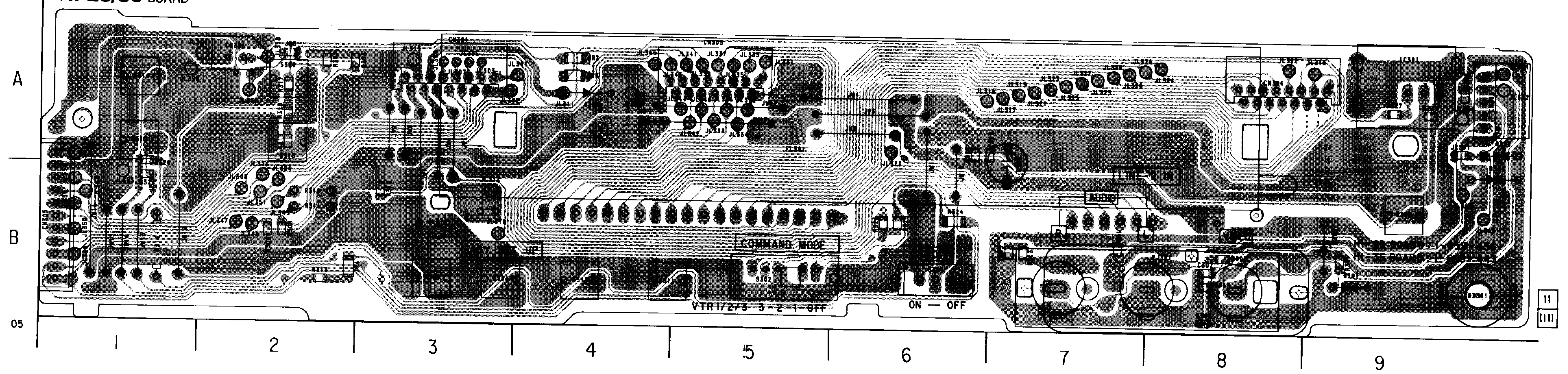
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	➡
PB	⇨	⇨	⇨	⇨

There are cases that the part isn't mounted in this model is printed on this diagram.

DM-47/51 (MODE CONTROL), HI-23/36 (FL DRIVER), MF-283/289 (POWER SWITCH), LE-12/15 (LED) (SLV-790/960) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

– Ref. No.: DM-47/51 Board, HI-23/36, MF-283/289 Board and LE-12/15 Board; 1,000 series –

HI-23/36 BOARD

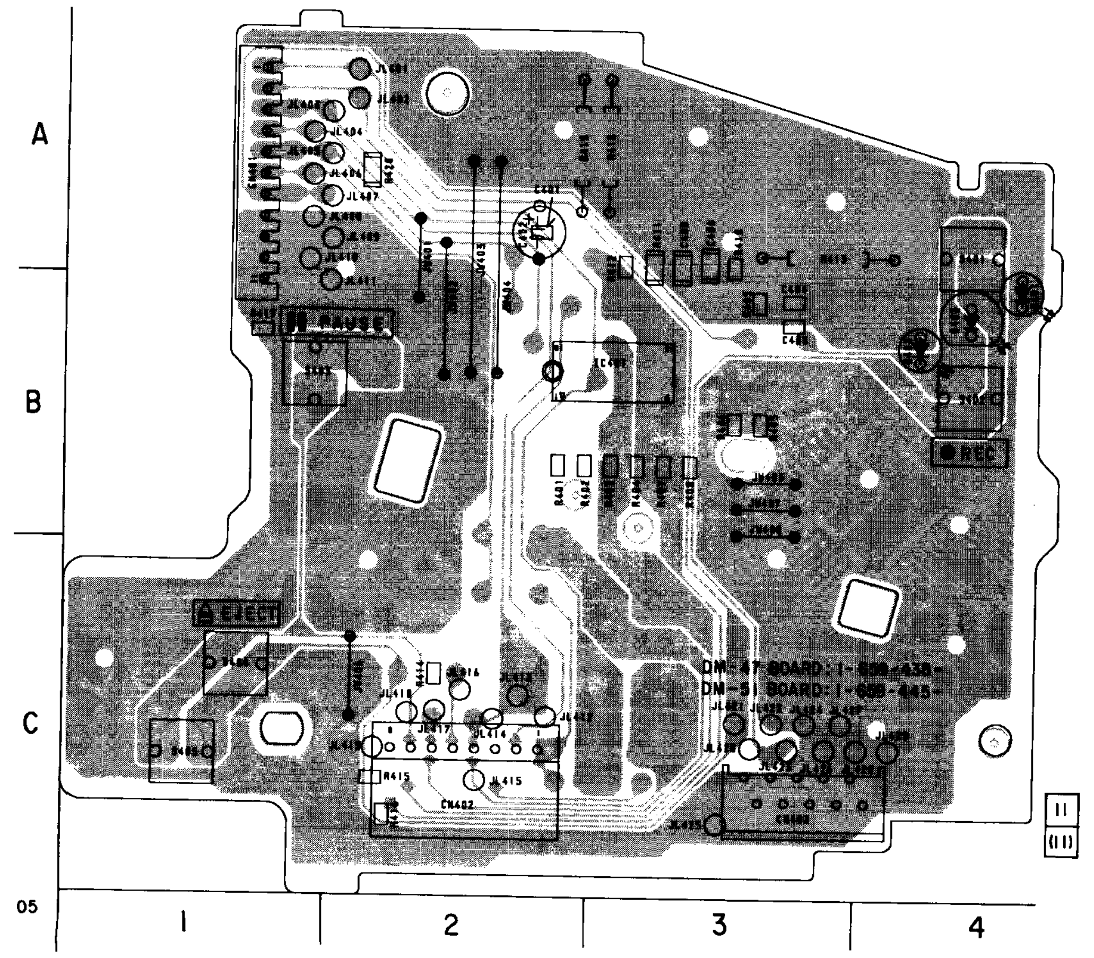


A
B
05
1
2
3
4
5
6
7
8
9
COMMAND MODE
AUDIO
VTR1/2/3 3-2-1-OFF
ON — OFF

HI-23/36 BOARD

CN301	A-3
CN302	A-9
CN303	A-5
CN304	A-8
CN305	B-1
CN306	A-2
D301	B-9
D302	B-9
D303	A-9
D304	A-9
D306	A-4

DM-47/51 BOARD

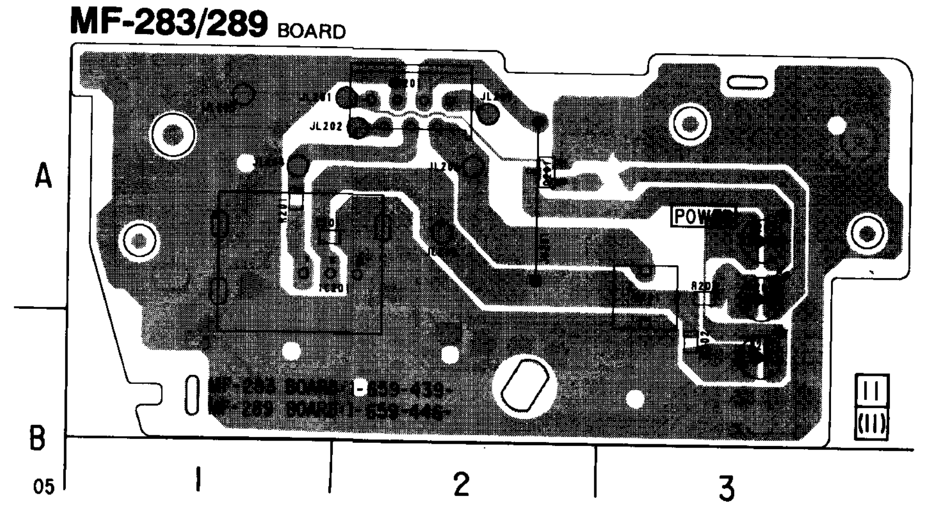


A
B
C
05
1
2
3
4
EJECT
REC

DM-47/51 BOARD

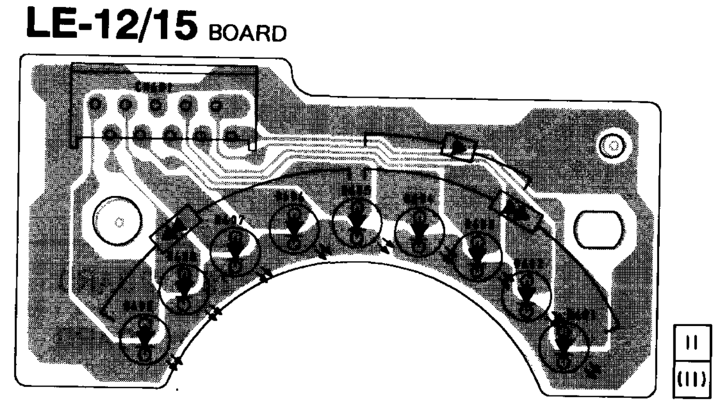
CN401	A-1
CN402	C-2
CN403	C-3
IC401	B-3

MF-283/289 BOARD

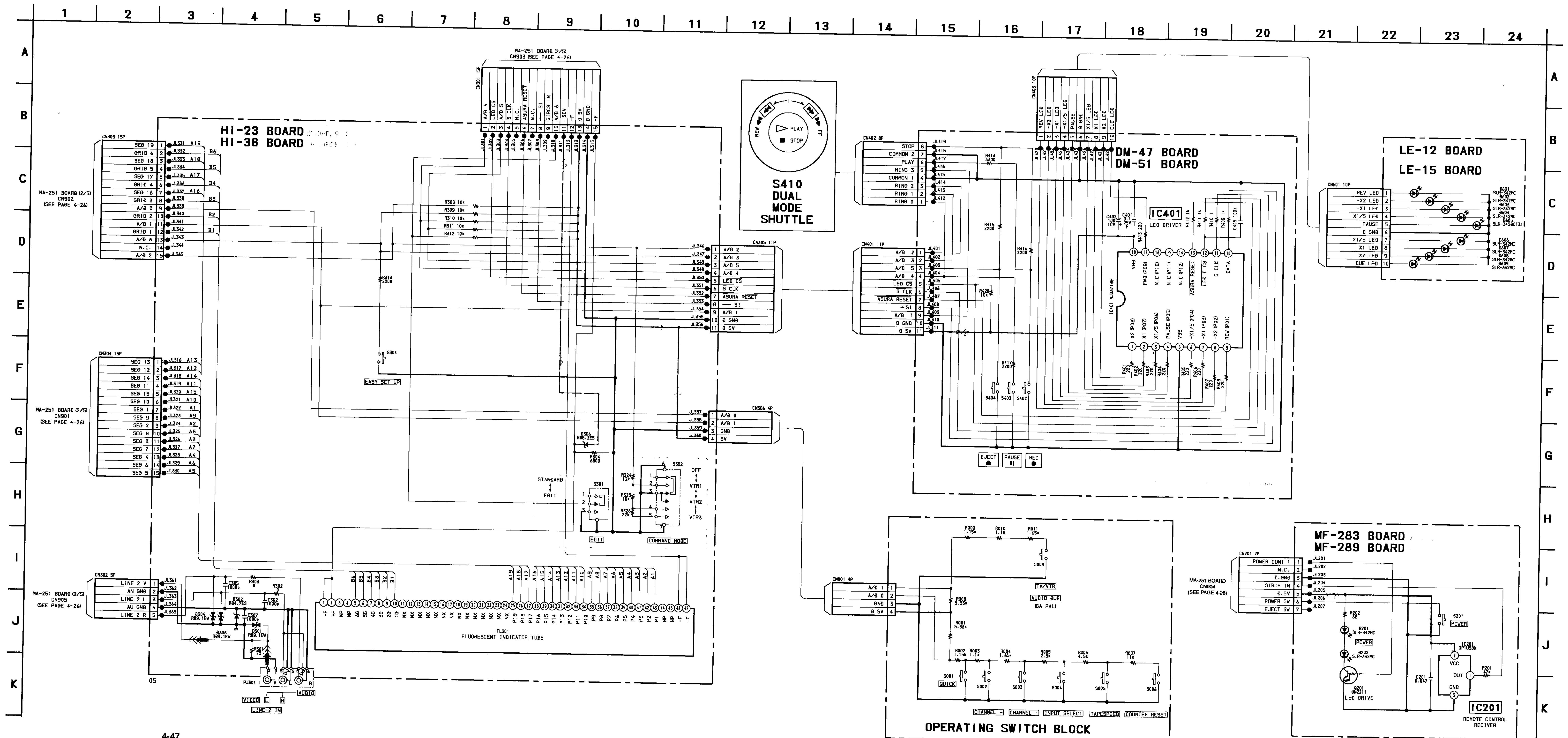


A
B
05
1
2
3
POWER

LE-12/15 BOARD



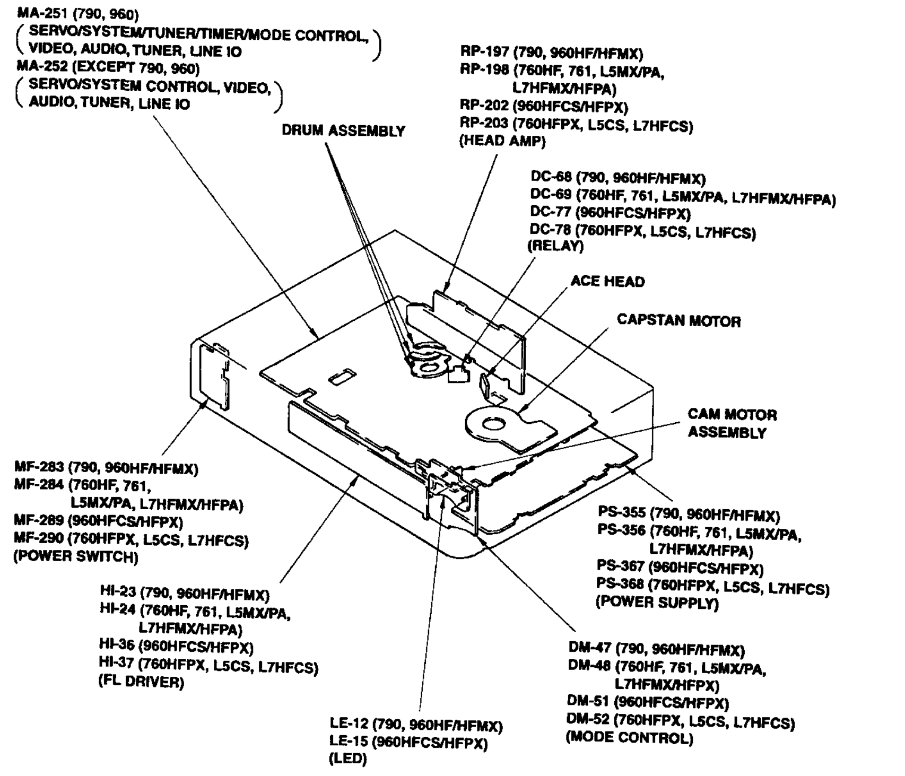
LE-12 BOARD : 1-659-440-
LE-15 BOARD : 1-659-447-



HI-23 BOARD
HI-36 BOARD
MA-251 BOARD (2/3) CN902 (SEE PAGE 4-26)
MA-251 BOARD (2/3) CN901 (SEE PAGE 4-26)
MA-251 BOARD (2/3) CN905 (SEE PAGE 4-26)
MA-251 BOARD (2/3) CN903 (SEE PAGE 4-26)
EASY SET UP
STANDARD
EDIT
COMMAND MODE
VTR1
VTR2
VTR3
OFF
S410 DUAL MODE SHUTTLE
PLAY
STOP
FL301 FLUORESCENT INDICATOR TUBE
VIDEO
L
R
AUDIO
LINE-2 IN
DM-47 BOARD
DM-51 BOARD
IC401
LED DRIVER
EJECT
PAUSE
REC
LE-12 BOARD
LE-15 BOARD
OPERATING SWITCH BLOCK
TX/VTR
AUDIO DUB
QUICK
CHANNEL +
CHANNEL -
INPUT SELECT
TAPE SPEED
COUNTER RESET
MF-283 BOARD
MF-289 BOARD
MA-251 BOARD CN904 (SEE PAGE 4-26)
POWER
IC201
REMOTE CONTROL RECEIVER
LED DRIVE

- Signal path

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨



MA-251 (790, 960)
(SERVO/SYSTEM/TUNER/TIMER/MODE CONTROL, VIDEO, AUDIO, TUNER, LINE IO)
MA-252 (EXCEPT 790, 960)
(SERVO/SYSTEM CONTROL, VIDEO, AUDIO, TUNER, LINE IO)
DRUM ASSEMBLY
RP-197 (790, 960HF/HFMX)
RP-198 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
RP-202 (960HFCS/HFPX)
RP-203 (760HFPX, L5CS, L7HFCS)
(HEAD AMP)
DC-68 (790, 960HF/HFMX)
DC-69 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
DC-77 (960HFCS/HFPX)
DC-78 (760HFPX, L5CS, L7HFCS)
(RELAY)
ACE HEAD
CAPSTAN MOTOR
CAM MOTOR ASSEMBLY
MF-283 (790, 960HF/HFMX)
MF-284 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
MF-289 (960HFCS/HFPX)
MF-290 (760HFPX, L5CS, L7HFCS)
(POWER SWITCH)
PS-355 (790, 960HF/HFMX)
PS-356 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
PS-367 (960HFCS/HFPX)
PS-368 (760HFPX, L5CS, L7HFCS)
(POWER SUPPLY)
HI-23 (790, 960HF/HFMX)
HI-24 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
HI-36 (960HFCS/HFPX)
HI-37 (760HFPX, L5CS, L7HFCS)
(FL DRIVER)
DM-47 (790, 960HF/HFMX)
DM-48 (760HF, 761, L5MX/PA, L7HFMX/HFPX)
DM-51 (960HFCS/HFPX)
DM-52 (760HFPX, L5CS, L7HFCS)
(MODE CONTROL)
LE-12 (790, 960HF/HFMX)
LE-15 (960HFCS/HFPX)
(LED)

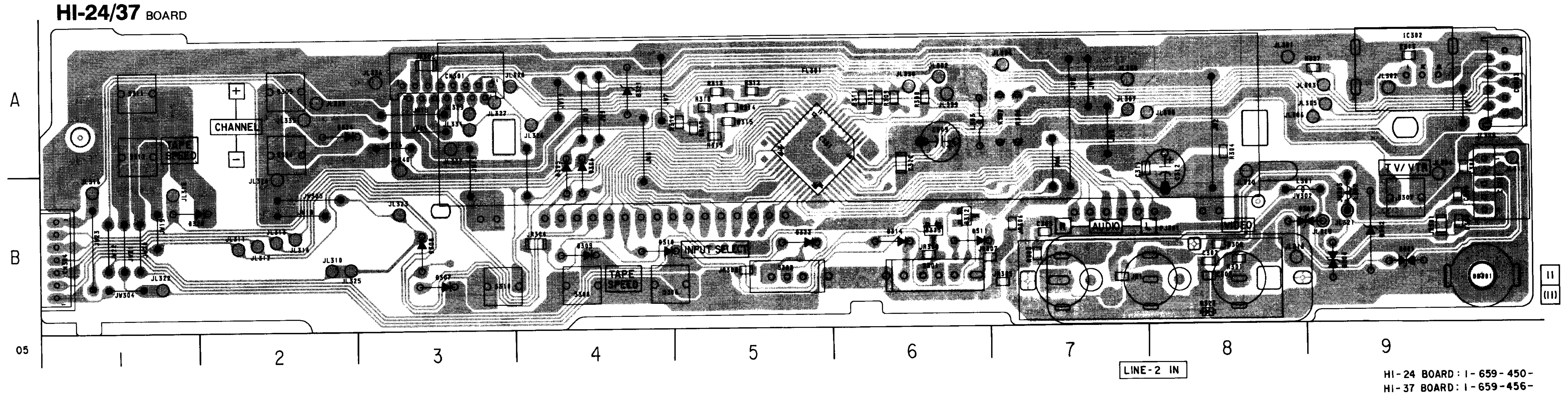
MODE CONTROL

There are cases that the part isn't mounted in this model is printed on this diagram.

DM-48/52 (MODE CONTROL), HI-24/37 (FL DRIVER), MF-284/290 (POWER SWITCH) (SLV-760/761/L5/L7) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

– Ref. No.: DM-48/52 Board, HI-24/37 Board and MF-284/290 Board; 2,000 series –

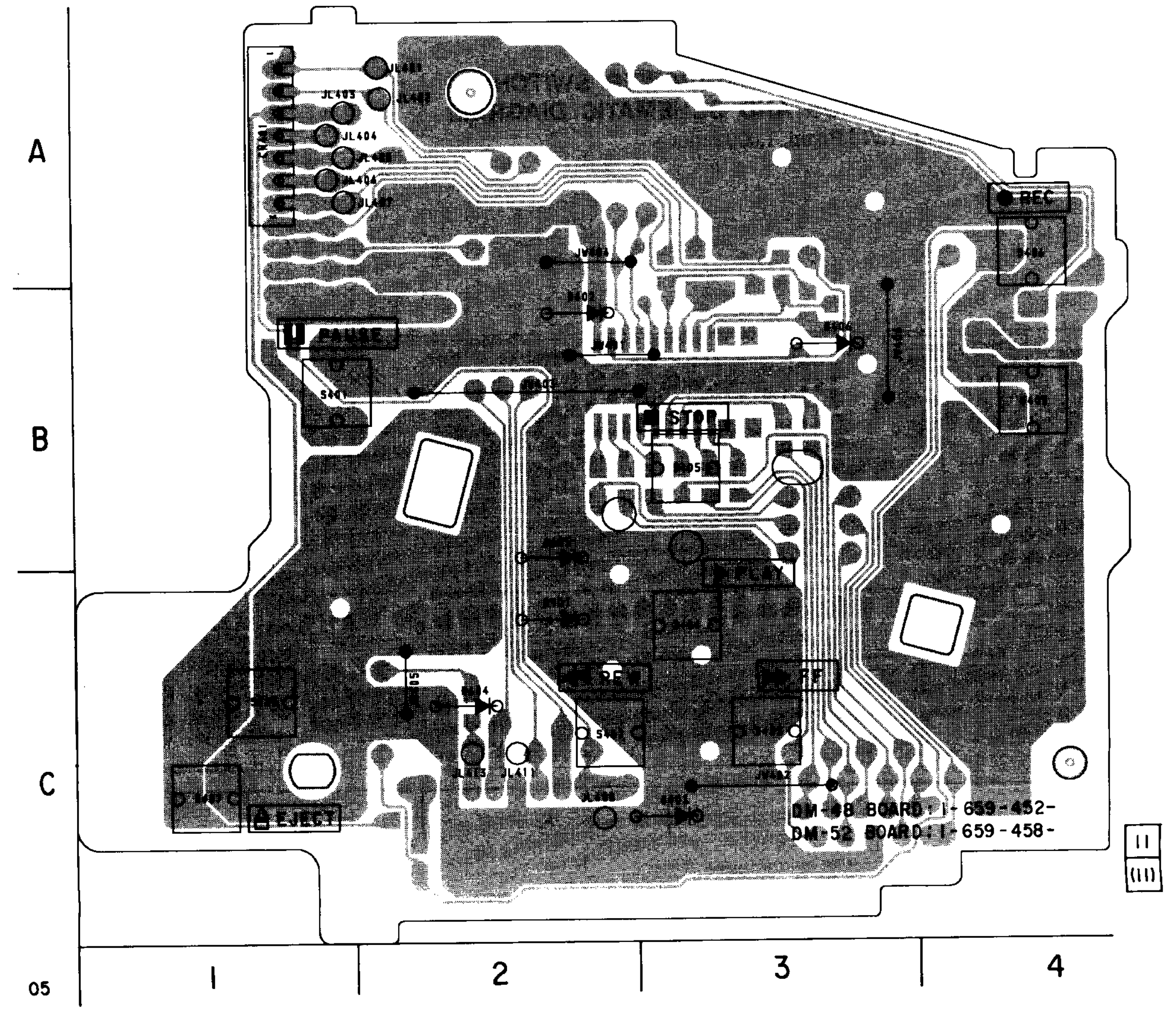
HI-24/37 BOARD


A
B
CHANNEL
INPUT SELECT
TAPE SPEED
AUDIO
TV/VTR
IC302
05
1
2
3
4
5
6
7
8
9
LINE-2 IN
HI-24 BOARD: 1-659-450-
HI-37 BOARD: 1-659-456-
II
(III)

HI-24/37 BOARD

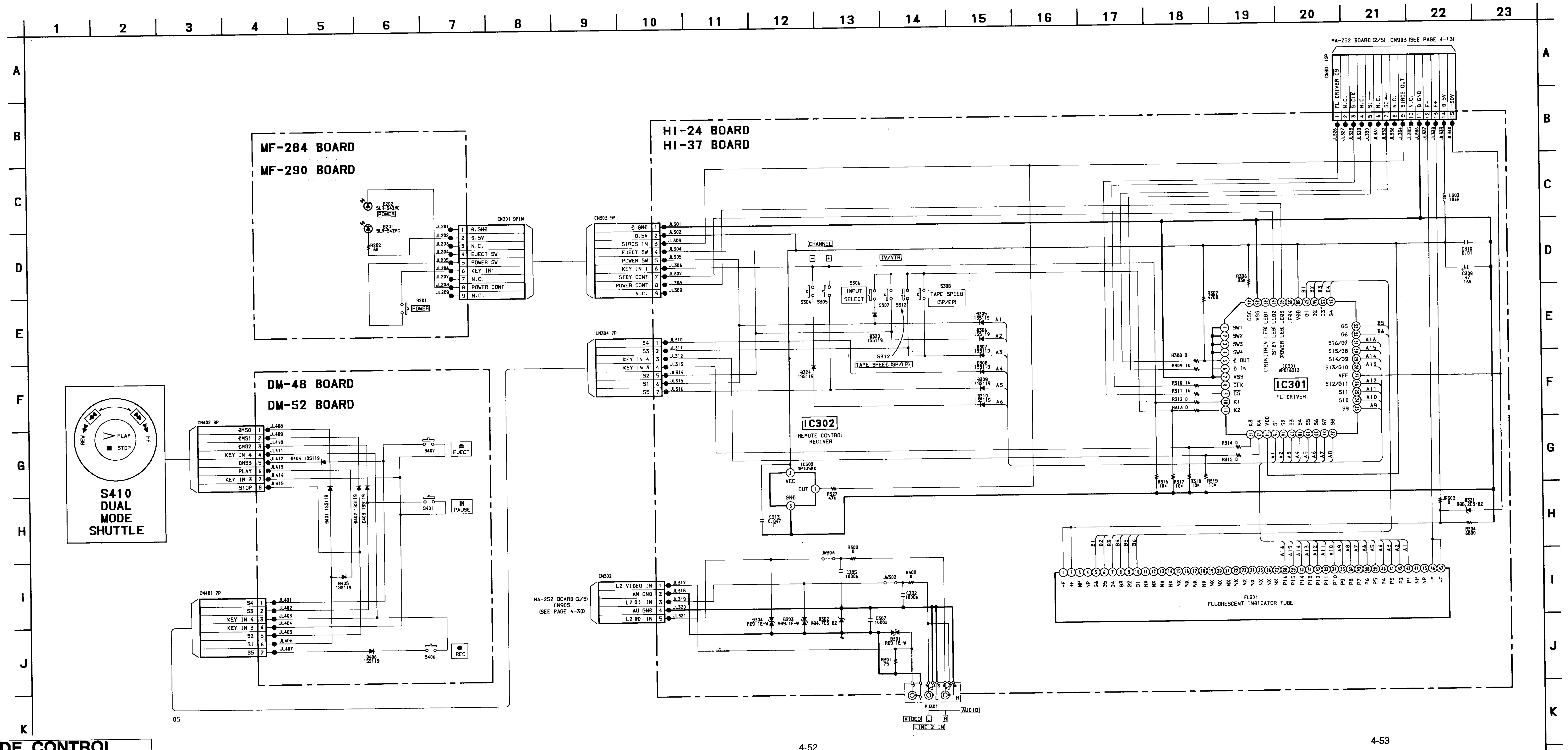
CN301	A-3
CN302	B-10
CN303	A-10
CN304	B-1
D301	B-9
D302	B-9
D303	B-8
D304	B-9
D305	A-4
D306	A-4
D307	B-3
D308	B-3
D309	B-4
D310	B-4
D320	B-1
D321	A-4
D324	A-2
IC301	A-5
IC302	A-9

DM-48/52 BOARD


A
B
C
REC
PAUSE
EJECT
FF
05
1
2
3
4
DM-48 BOARD: 1-659-452-
DM-52 BOARD: 1-659-458-
II
(III)

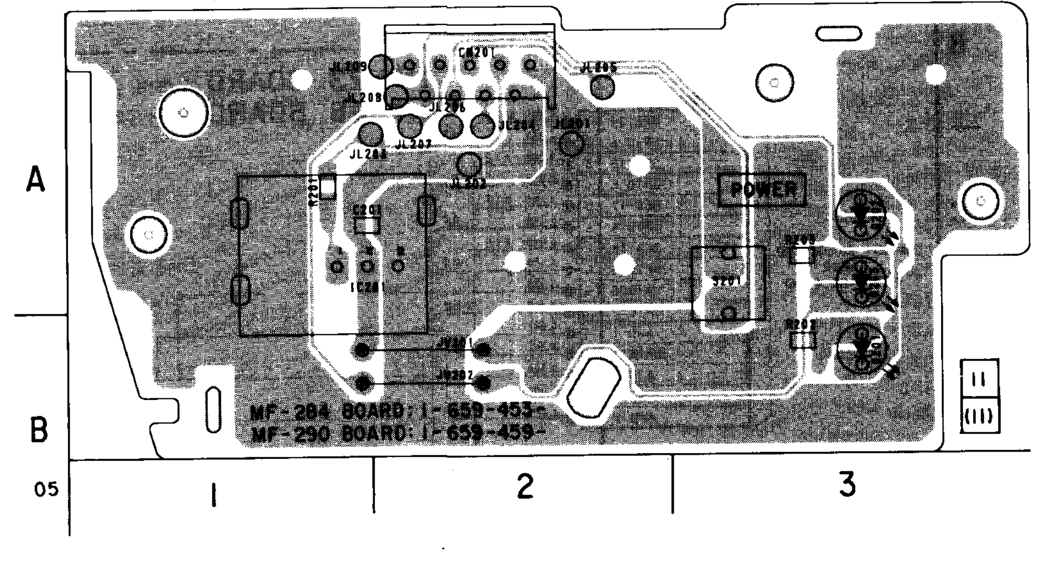
DM-48/52 BOARD

CN401	A-1
CN402	C-2
D401	C-2
D402	B-2
D403	C-3
D404	C-2
D405	B-2
D406	B-3


MF-284 BOARD
MF-290 BOARD
D202 SLR-342MC POWER
D201 SLR-342MC
R202 68
S201 POWER
CN201 9PIN
D.GND
D.5V
N.C.
EJECT SW
POWER SW
KEY IN1
POWER CONT
CN303 9P
SIRCS IN
KEY IN 1
STBY CONT
CN304 7P
KEY IN 4
KEY IN 3
HI-24 BOARD
HI-37 BOARD
CHANNEL
TV/VTR
INPUT SELECT
TAPE SPEED (SP/EP)
TAPE SPEED(SP/LP)
IC302
REMOTE CONTROL RECEIVER
IC301
FL DRIVER
FL301
FLUORESCENT INDICATOR TUBE
MA-252 BOARD (2/5) CN903 (SEE PAGE 4-13)
CN301 15P
FL DRIVER CS
S CLK
SIRCS OUT
F-
F+
-30V
L303 10μH
DM-48 BOARD
DM-52 BOARD
CN402 8P
S410
DUAL
MODE
SHUTTLE
PLAY
STOP
EJECT
PAUSE
REC
CN401 7P
CN302
MA-252 BOARD (2/5) CN905 (SEE PAGE 4-30)
L2 VIDEO IN
AN GND
L2 L1 IN
AU GND
L2 R1 IN
VIDEO
AUDIO
LINE-2 IN
J501

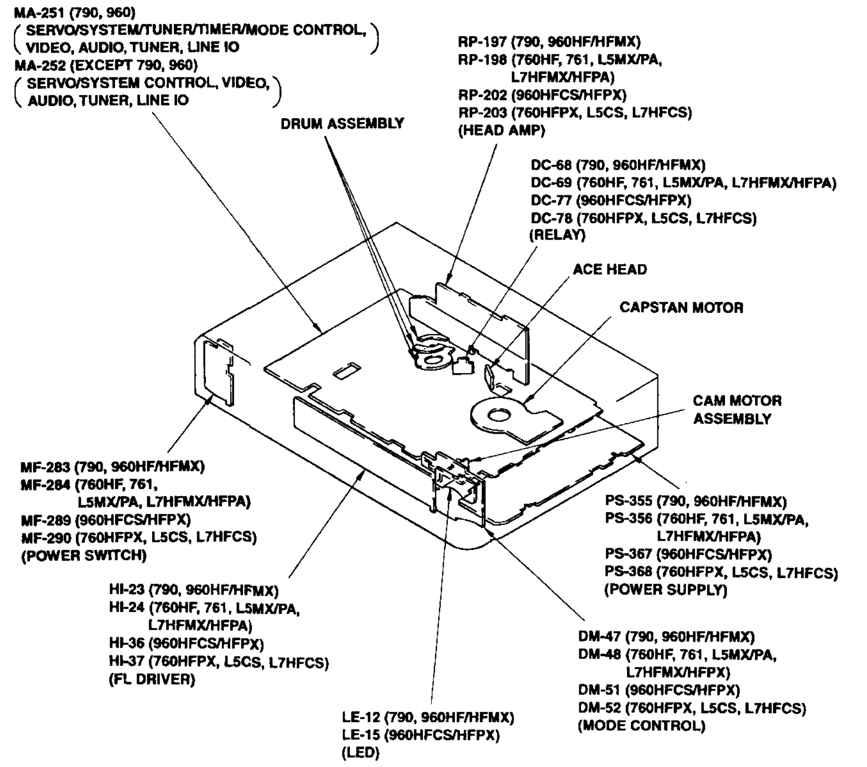
MODE CONTROL
DM-48/52, HI-24/37, MF-284/290

MF-284/290 BOARD


A
B
POWER
05
1
2
3
MF-284 BOARD: 1-659-453-
MF-290 BOARD: 1-659-459-
II
(III)

- Signal path

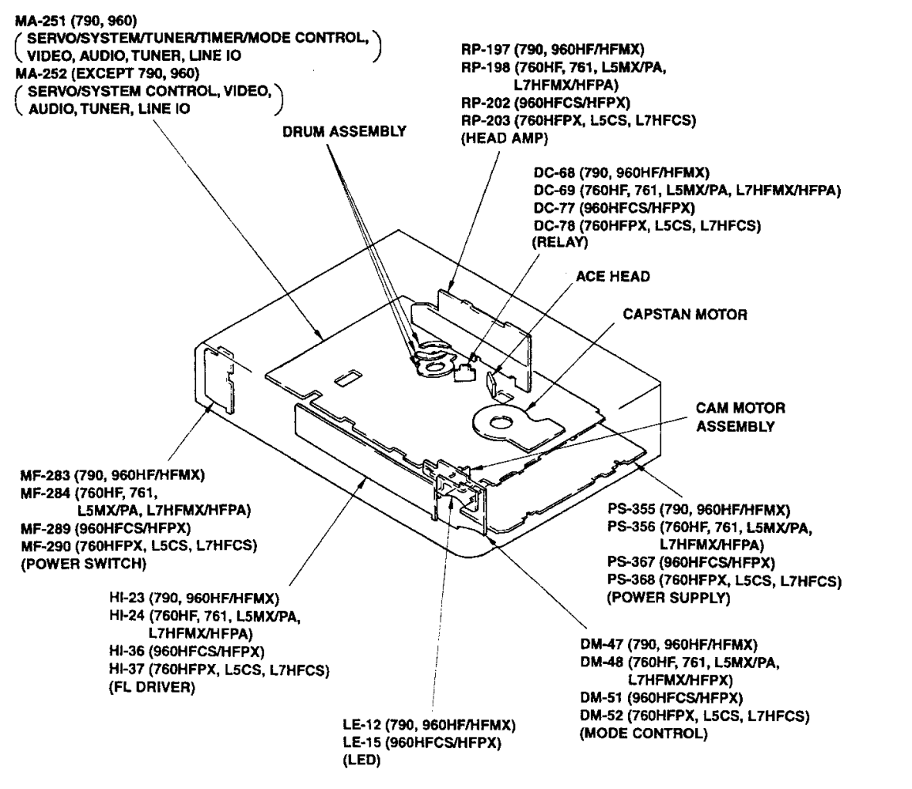
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	[illegible]	[illegible]	[illegible]	➡
PB	[illegible]		[illegible]	⇨


MA-251 (790, 960)
(SERVO/SYSTEM/TUNER/TIMER/MODE CONTROL, VIDEO, AUDIO, TUNER, LINE IO)
MA-252 (EXCEPT 790, 960)
(SERVO/SYSTEM CONTROL, VIDEO, AUDIO, TUNER, LINE IO)
DRUM ASSEMBLY
RP-197 (790, 960HF/HFMX)
RP-198 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
RP-202 (960HFCS/HFPX)
RP-203 (760HFPX, L5CS, L7HFCS)
(HEAD AMP)
DC-68 (790, 960HF/HFMX)
DC-69 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
DC-77 (960HFCS/HFPX)
DC-78 (760HFPX, L5CS, L7HFCS)
(RELAY)
ACE HEAD
CAPSTAN MOTOR
CAM MOTOR ASSEMBLY
MF-283 (790, 960HF/HFMX)
MF-284 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
MF-289 (960HFCS/HFPX)
MF-290 (760HFPX, L5CS, L7HFCS)
(POWER SWITCH)
PS-355 (790, 960HF/HFMX)
PS-356 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
PS-367 (960HFCS/HFPX)
PS-368 (760HFPX, L5CS, L7HFCS)
(POWER SUPPLY)
HI-23 (790, 960HF/HFMX)
HI-24 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
HI-36 (960HFCS/HFPX)
HI-37 (760HFPX, L5CS, L7HFCS)
(FL DRIVER)
DM-47 (790, 960HF/HFMX)
DM-48 (760HF, 761, L5MX/PA, L7HFMX/HFPX)
DM-51 (960HFCS/HFPX)
DM-52 (760HFPX, L5CS, L7HFCS)
(MODE CONTROL)
LE-12 (790, 960HF/HFMX)
LE-15 (960HFCS/HFPX)
(LED)

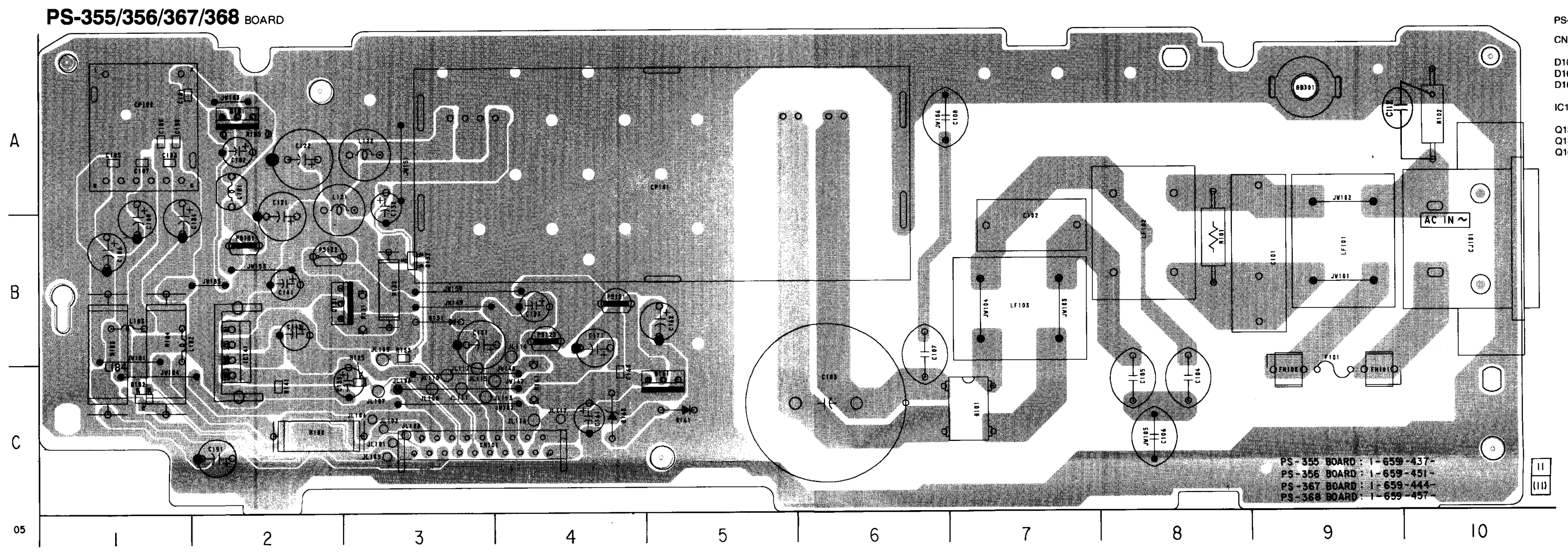
There are cases that the part isn't mounted in this model is printed on this diagram.

PS-355/356/367/368 (POWER SUPPLY) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

– Ref. No.: PS-355/356 Board; 1,000 series, PS-367/368 Board; 2,000 series, –

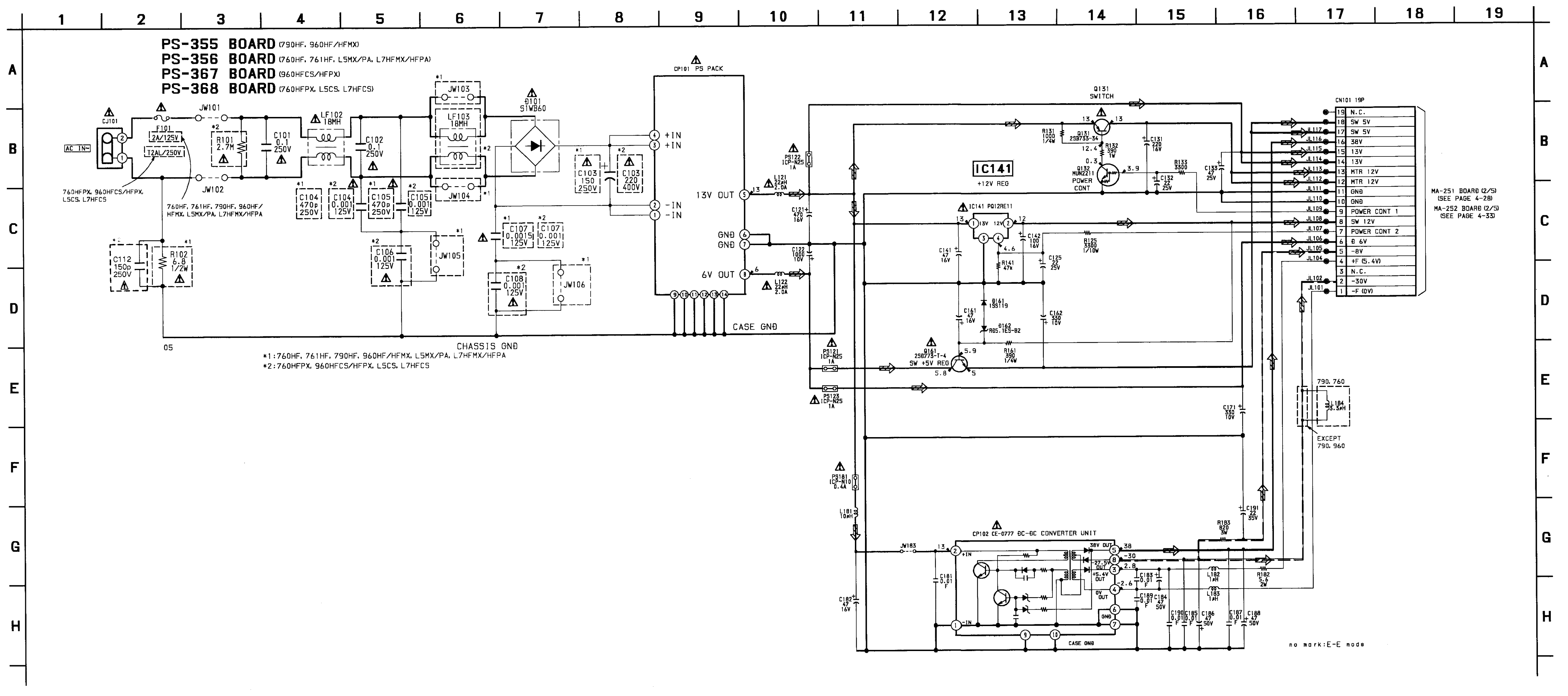

MA-251 (790, 960)
(SERVO/SYSTEM/TUNER/TIMER/MODE CONTROL, VIDEO, AUDIO, TUNER, LINE IO)
MA-252 (EXCEPT 790, 960)
(SERVO/SYSTEM CONTROL, VIDEO, AUDIO, TUNER, LINE IO)
DRUM ASSEMBLY
RP-197 (790, 960HF/HFMX)
RP-198 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
RP-202 (960HFCS/HFPX)
RP-203 (760HFPX, L5CS, L7HFCS)
(HEAD AMP)
DC-68 (790, 960HF/HFMX)
DC-69 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
DC-77 (960HFCS/HFPX)
DC-78 (760HFPX, L5CS, L7HFCS)
(RELAY)
ACE HEAD
CAPSTAN MOTOR
CAM MOTOR ASSEMBLY
MF-283 (790, 960HF/HFMX)
MF-284 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
MF-289 (960HFCS/HFPX)
MF-290 (760HFPX, L5CS, L7HFCS)
(POWER SWITCH)
PS-355 (790, 960HF/HFMX)
PS-356 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
PS-367 (960HFCS/HFPX)
PS-368 (760HFPX, L5CS, L7HFCS)
(POWER SUPPLY)
HI-23 (790, 960HF/HFMX)
HI-24 (760HF, 761, L5MX/PA, L7HFMX/HFPA)
HI-36 (960HFCS/HFPX)
HI-37 (760HFPX, L5CS, L7HFCS)
(FL DRIVER)
DM-47 (790, 960HF/HFMX)
DM-48 (760HF, 761, L5MX/PA, L7HFMX/HFPX)
DM-51 (960HFCS/HFPX)
DM-52 (760HFPX, L5CS, L7HFCS)
(MODE CONTROL)
LE-12 (790, 960HF/HFMX)
LE-15 (960HFCS/HFPX)
(LED)

PS-355/356/367/368 BOARD

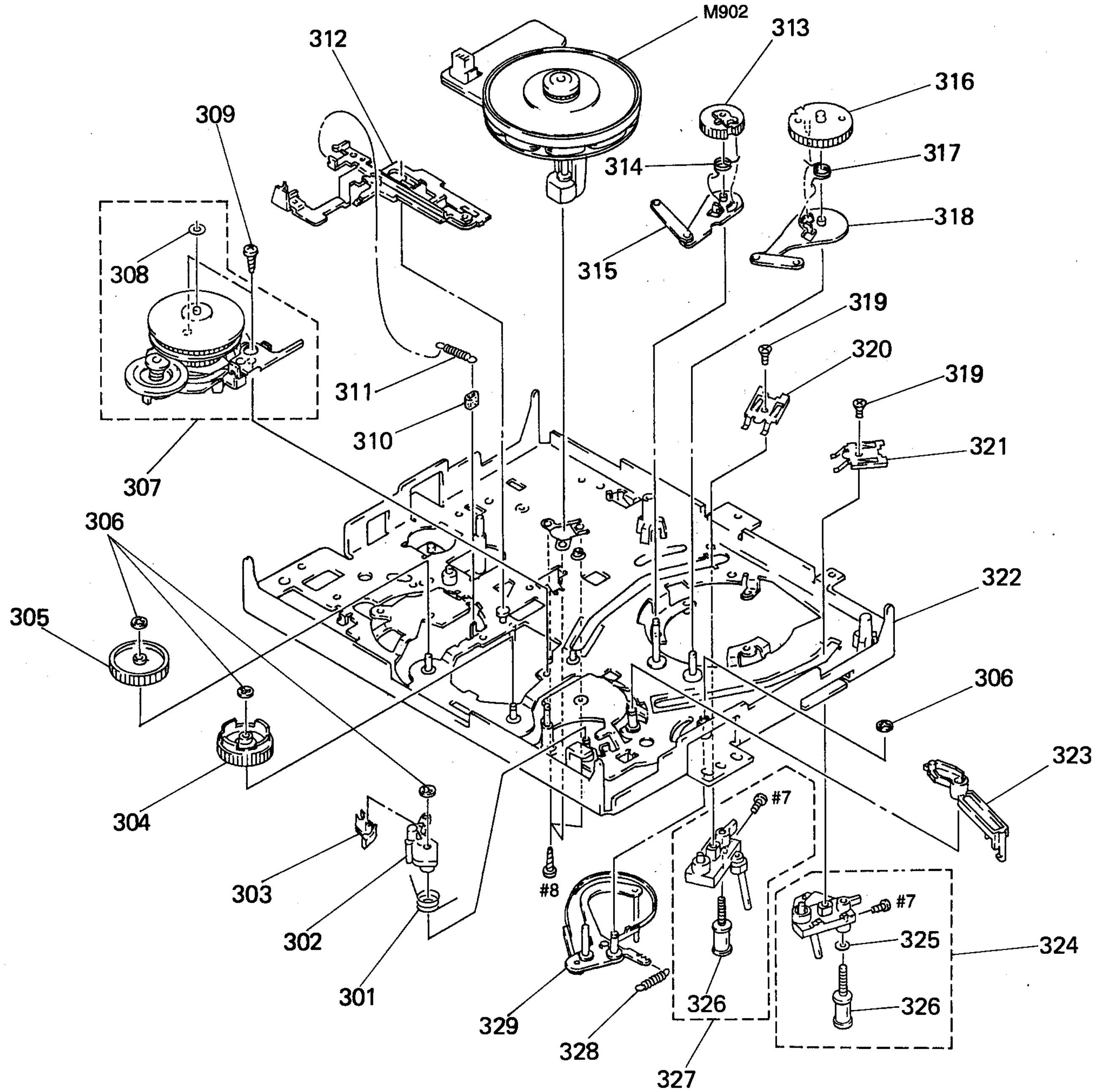

A
B
C
05
1
2
3
4
5
6
7
8
9
10
AC IN ~
CJ101
PS-367 BOARD : 1-659-444-
PS-368 BOARD : 1-659-457-
11
(11)

PS-355/356/367/368 BOARD

CN101	C-3
D101	C-7
D161	C-5
D162	C-4
IC141	B-2
Q131	B-2
Q132	B-3
Q161	C-5


PS-355 BOARD (790HF, 960HF/HFMX)
PS-356 BOARD (760HF, 761HF, L5MX/PA, L7HFMX/HFPA)
PS-367 BOARD (960HFCS/HFPX)
PS-368 BOARD (760HFPX, L5CS, L7HFCS)
AC IN~
CJ101
F101
2A/125V
T2AL/250V
JW101
JW102
R101 2.7M
C101 0.1 250V
LF102 18MH
C102 0.1 250V
LF103 18MH
JW103
JW104
JW105
D101 S1WB60
C103 150 250V
C103 220 400V
C104 470p 250V
C104 0.001 125V
C105 470p 250V
C105 0.001 125V
C106 0.001 125V
C107 0.0015 125V
C107 0.001 125V
C112 150p
R102 6.8 1/2W
760HFPX, 960HFCS/HFPX, L5CS, L7HFCS
760HF, 761HF, 790HF, 960HF/HFMX, L5MX/PA, L7HFMX/HFPA
CP101 PS PACK
+IN
-IN
13V OUT
GND
6V OUT
CASE GND
CHASSIS GND
05
*1:760HF, 761HF, 790HF, 960HF/HFMX, L5MX/PA, L7HFMX/HFPA
*2:760HFPX, 960HFCS/HFPX, L5CS, L7HFCS
PS122 ICP-N25 1A
L121 22μH 2.0A
C121 470 16V
C122 1000 10V
L122 22μH 2.0A
Q131 SWITCH
Q131 2SB733-34
R131 1000 1/4W
R132 390 1W
C131 220 16V
Q132 MUN2211 POWER CONT
R133 3300
C132 22 25V
C133 47 25V
IC141
+12V REG
IC141 PQ12RE11
C141 47 16V
C142 100 16V
R141 47k
C125 22 25V
R125 3300 1/10W
D161 1SS119
D162 RD5.1ES-B2
C161 47 16V
C162 330 10V
Q161 2SD773-T-4 SW +5V REG
R161 390 1/4W
PS121 ICP-N25 1A
PS123 ICP-N25 1A
PS181 ICP-N10 0.4A
C171 330 10V
C191
CN101 19P
19 N.C.
18 SW 5V
17 SW 5V
16 38V
15 13V
14 13V
13 MTR 12V
12 MTR 12V
11 GND
10 GND
9 POWER CONT 1
8 SW 12V
7 POWER CONT 2
6 D 6V
5 -8V
4 +F (5.4V)
3 N.C.
2 -30V
1 -F (0V)
MA-251 BOARD (2/5) (SEE PAGE 4-28)
MA-252 BOARD (2/5) (SEE PAGE 4-33)
790, 760
L184 3.3μH
EXCEPT 790, 960
CP182 DC-DC CONVERTER UNIT
CASE GND
no mark:E-E mode
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
A
B
C
D
E
F
G
H

5-1-7. MECHANISM CHASSIS ASSEMBLY (4)



M902
312
313
316
309
314
317
318
308
315
319
320
319
311
310
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Ref. No.	Part No.	Description	Remark
301	3-958-534-01	SPRING, TORSION	
302	3-958-532-01	ARM, S WINDING	
303	3-958-533-01	CLAW, S WINDING	
304	3-962-959-01	GEAR (S-K), IDLER	
305	3-962-960-01	GEAR (T-K), IDLER	
306	3-669-595-00	WASHER (2), STOPPER	
307	A-6739-102-A	RKB BLOCK ASSY	
308	3-966-092-01	RING, RETAINING, SLIT WASHER	
309	3-961-441-01	SCREW (3X8)	
310	3-959-840-11	RUBBER, JOINT	
311	3-958-529-01	SPRING (MOMENT), TENSION	
312	X-3943-897-1	LEVER ASSY, TRIGGER	
313	3-958-485-02	GEAR (T), LOADING	
314	3-960-449-01	SPRING (T), TORSION COIL	
315	X-3943-891-1	LEVER (T) ASSY, LOADING	

Ref. No.	Part No.	Description	Remark
316	3-958-476-01	GEAR (S), LOADING	
317	3-960-448-01	SPRING (S), TORSION COIL	
318	X-3943-890-1	LEVER (S) ASSY, LOADING	
319	3-960-720-01	SCREW	
320	3-960-688-01	SPRING, LEAF (T), LOADING	
321	3-960-687-01	SPRING, LEAF (S), LOADING	
322	X-3945-485-1	CHASSIS ASSY, MECHANICAL	
323	3-958-504-01	ARM, FIXED RELEASE	
324	A-6750-316-A	SHUTTLE (S) BLOCK ASSY	
325	3-962-874-01	O-RING	
326	X-3944-378-1	ROLLER ASSY, GUIDE	
327	A-6750-314-A	T BLOCK ASSY, SHUTTLE	
328	3-958-492-01	SPRING (TG1), TENSION COIL	
329	X-3943-886-1	TG1 ASSY	
M902	1-698-409-11	MOTOR, DC SCV-0801A/Z-NP (CAPSTAN)	

5-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, -so they may have some difference from the original one.
- RESISTORS .
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
	A-6794-137-A	DC-68 BOARD, COMPLETE (790, 960HF/HFMX)	
*	A-6794-137-A	DC-69 BOARD, COMPLETE (760, 761, L5MX/PA, L7HFMX/HFPA)	
	A-6794-137-A	DC-77 BOARD, COMPLETE (960HFCS/HFPX)	
	A-6794-137-A	DC-78 BOARD, COMPLETE(760HFPX, L5CS, L7HFCS)	
		*********************	
		(Ref. No. 1,000 Series)	
		< CONNECTOR >	
* CN001	1-766-714-11	CONNECTOR, BOARD TO BOAR 5P	
* CN002	1-766-713-11	CONNECTOR, BOARD TO BOAR 5P	

Ref. No.	Part No.	Description	Remark
*	A-6782-809-A	DM-47 BOARD, COMPLETE(790, 960HF/HFMX)	
*	A-6782-803-A	DM-51 BOARD, COMPLETE (960HFCS/HFPX)	
		*********************	
		(Ref. No. 1,000 Series)	
		< CAPACITOR >	
C401	1-163-038-91	CERAMIC CHIP	0.1uF 25V
C402	1-126-933-11	ELECT	100uF 20% 10V
C405	1-163-181-00	CERAMIC CHIP	100PF 5% 50V
		< CONNECTOR >	
CN401	1-568-665-11	CONNECTOR, BOARD TO BOARD 11P	
CN402	1-580-850-11	CONNECTOR (DMS) 8P	
CN403	1-695-371-31	CONNECTOR, FFC/FPC 10P	
		< IC >	
IC401	8-759-366-45	IC	NJU3713G(TE2)
		< RESISTOR >	
R401	1-216-033-00	METAL CHIP	220 5% 1/10W
R402	1-216-033-00	METAL CHIP	220 5% 1/10W
R403	1-216-033-00	METAL CHIP	220 5% 1/10W
R404	1-216-033-00	METAL CHIP	220 5% 1/10W
R405	1-216-033-00	METAL CHIP	220 5% 1/10W
R406	1-216-033-00	METAL CHIP	220 5% 1/10W
R407	1-216-033-00	METAL CHIP	220 5% 1/10W
R408	1-216-033-00	METAL CHIP	220 5% 1/10W
R409	1-216-049-91	METAL GLAZE	1K 5% 1/10W
R410	1-216-049-91	METAL GLAZE	1K 5% 1/10W
R411	1-216-198-91	METAL GLAZE	1K 5% 1/8W
R412	1-216-049-91	METAL GLAZE	1K 5% 1/10W
R413	1-247-815-91	CARBON	220 5% 1/4W
R414	1-216-061-00	METAL CHIP	3.3K 5% 1/10W
R415	1-216-057-00	METAL CHIP	2.2K 5% 1/10W
R416	1-216-057-00	METAL CHIP	2.2K 5% 1/10W
R417	1-216-057-00	METAL CHIP	2.2K 5% 1/10W
R420	1-216-222-00	METAL GLAZE	10K 5% 1/8W
		< SWITCH >	
S402	1-571-977-11	SWITCH, TACTIL (● REC)	
S403	1-571-977-11	SWITCH, TACTIL (❚❚ PAUSE)	
S404	1-571-977-11	SWITCH, TACTIL (⏏ EJECT)	
S410	1-572-662-11	SWITCH, ROTARY (DUAL MODE SHUTTLE)	

Ref. No.	Part No.	Description	Remark
*	A-6782-788-A	DM-48 BOARD, COMPLETE (760, 761, L5MX/PA, L7HFMX/HFPA)	
*	A-6782-818-A	DM-52 BOARD, COMPLETE(760HFPX, L5CS, L7HFCS)	
		*********************	
		(Ref. No. 2,000 Series)	
		< CONNECTOR >	
CN401	1-770-031-11	CONNECTOR, BOARD TO BOARD 7P	
CN402	1-580-850-11	CONNECTOR (DMS) 8P	
		< DIODE >	
D401	8-719-911-19	DIODE	1SS119-25
D402	8-719-911-19	DIODE	1SS119-25
D403	8-719-911-19	DIODE	1SS119-25
D404	8-719-911-19	DIODE	1SS119-25
D405	8-719-911-19	DIODE	1SS119-25
D406	8-719-911-19	DIODE	1SS119-25

< SWITCH >

Ref. No.	Part No.	Description	Remark
S401	1-571-977-11	SWITCH, TACTIL (❚❚ PAUSE)	
S406	1-571-977-11	SWITCH, TACTIL (● REC)	
S407	1-571-977-11	SWITCH, TACTIL (⏏ EJECT)	
S410	1-572-662-11	SWITCH, ROTARY (DUAL MODE SHUTTLE)	

Ref. No.	Part No.	Description	Remark
*	A-6782-813-A	HI-23 BOARD, COMPLETE (790)	
*	A-6782-810-A	HI-23 BOARD, COMPLETE (960HF/HFMX)	
*	A-6782-807-A	HI-36 BOARD, COMPLETE (960HFCS/HFPX)	

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(Ref. No. 1,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description				Remark
C302	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C305	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C307	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN301	1-774-461-11	CONNECTOR, FFC/FPC 15P	
CN302	1-506-484-11	PIN, CONNECTOR 5P	
CN303	1-774-461-11	CONNECTOR, FFC/FPC 15P	
CN304	1-774-461-11	CONNECTOR, FFC/FPC 15P	
CN305	1-568-671-11	CONNECTOR, BOARD TO BOARD 11P	
CN306	1-691-036-21	PIN, CONNECTOR (PC BOARD) 4P	

< DIODE >

Ref. No.	Part No.	Description		Remark
D301	8-719-108-12	DIODE	RD9.1E-W	
D302	8-719-109-81	DIODE	RD4.7ES-B2	
D303	8-719-108-12	DIODE	RD9.1E-W	
D304	8-719-108-12	DIODE	RD9.1E-W	
D306	8-719-110-08	DIODE	RD8.2ES-B2	

< FLUORESCENT INDICATOR TUBE >

Ref. No.	Part No.	Description	Remark
FL301	1-517-477-11	TUBE, FLUORESCENT INDICATOR	

< JUMPER RESISTOR >

Ref. No.	Part No.	Description				Remark
JR001	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR002	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR003	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR004	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR005	1-216-295-00	METAL CHIP	0	5%	1/10W	

< JACK >

Ref. No.	Part No.	Description	Remark
PJ301	1-766-861-11	JACK, PIN (3P) (LINE-2 IN)	

< RESISTOR >

Ref. No.	Part No.	Description				Remark
R301	1-216-022-00	METAL CHIP	75	5%	1/10W	
R302	1-216-295-00	METAL CHIP	0	5%	1/10W	
R303	1-216-295-00	METAL CHIP	0	5%	1/10W	
R304	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R308	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R309	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R310	1-249-429-11	CARBON	10K	5%	1/4W	
R311	1-249-429-11	CARBON	10K	5%	1/4W	
R312	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R313	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R324	1-216-224-91	METAL GLAZE	12K	5%	1/8W	(960)
R325	1-216-073-00	METAL CHIP	10K	5%	1/10W	(960)
R326	1-216-081-00	METAL CHIP	22K	5%	1/10W	(960)

< SWITCH >

Ref. No.	Part No.	Description	Remark
S301	1-572-908-11	SWITCH, SLIDE (EDIT)	(960)
S302	1-762-171-11	SWITCH, SLIDE (COMMAND MODE)	(960)
S304	1-571-977-11	SWITCH, TACTIL (EASY SET UP)	

Ref. No.	Part No.	Description	Remark
*	A-6782-790-A	HI-24 BOARD, COMPLETE (760,761)	
*	A-6782-801-A	HI-24 BOARD, COMPLETE (L5MX/PA)	
*	A-6782-816-A	HI-24 BOARD, COMPLETE (L7HFMX/HFPA)	
*	A-6782-805-A	HI-37 BOARD, COMPLETE (760HFPX)	
*	A-6782-822-A	HI-37 BOARD, COMPLETE (L5CS)	
*	A-6782-797-A	HI-37 BOARD, COMPLETE (L7HFCS)	

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(Ref. No. 2,000 Series)

Ref. No.	Part No.	Description	Remark
*	3-966-234-01	HOLDER (A), FL	

< CAPACITOR >

Ref. No.	Part No.	Description				Remark
C302	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	(760,761)
C305	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	(760,761)
C307	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	(760,761)
C309	1-126-967-11	ELECT	47uF	20%	16V	
C310	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V	
C313	1-163-035-00	CERAMIC CHIP	0.047uF		50V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN301	1-774-461-11	CONNECTOR, FFC/FPC 15P	
CN302	1-506-484-11	PIN, CONNECTOR 5P	(760,761)
CN303	1-691-068-21	HOUSING, CONNECTOR 9P	
* CN304	1-691-406-11	CONNECTOR, BOARD TO BOARD 7P	

< DIODE >

Ref. No.	Part No.	Description		Remark
D301	8-719-108-12	DIODE	RD9.1E-W	(760,761)
D302	8-719-109-81	DIODE	RD4.7ES-B2	(760,761)
D303	8-719-108-12	DIODE	RD9.1E-W	(760,761)

Ref. No.	Part No.	Description	Remark
D304	8-719-108-12	DIODE RD9.1E-W	(760, 761)
D305	8-719-911-19	DIODE 1SS119-25	
D306	8-719-911-19	DIODE 1SS119-25	
D307	8-719-911-19	DIODE 1SS119-25	
D308	8-719-911-19	DIODE 1SS119-25	
D309	8-719-911-19	DIODE 1SS119-25	
D310	8-719-911-19	DIODE 1SS119-25	
D320	8-719-911-19	DIODE 1SS119-25	
D321	8-719-110-08	DIODE RD8.2ES-B2	
D324	8-719-911-19	DIODE 1SS119	
		< FLUORESCENT INDICATOR TUBE >	
FL301	1-517-478-11	TUBE, FLUORESCENT INDICATOR	
		< IC >	
IC301	8-759-366-44	IC uPD16312GB-3B4	
IC302	1-466-833-11	IC RAY-CATCHER BLOCK, REMOCON	
		< JUMPER RESISTOR >	
JR001	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761)
JR302	1-216-296-00	METAL CHIP 0 5% 1/10W	
		< COIL >	
L303	1-410-509-11	INDUCTOR 10uH	
		< JACK >	
PJ301	1-774-509-11	JACK, PIN 3P (LINE-2 IN)	(760, 761)
		< RESISTOR >	
R301	1-216-022-00	METAL CHIP 75 5% 1/10W	(760, 761)
R302	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761)
R303	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761)
R304	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R306	1-249-435-11	CARBON 33K 5% 1/4W	
R307	1-249-425-11	CARBON 4.7K 5% 1/4W	
R308	1-216-295-00	METAL CHIP 0 5% 1/10W	
R309	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R310	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R311	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R312	1-216-295-00	METAL CHIP 0 5% 1/10W	
R313	1-216-295-00	METAL CHIP 0 5% 1/10W	
R314	1-216-295-00	METAL CHIP 0 5% 1/10W	
R315	1-216-295-00	METAL CHIP 0 5% 1/10W	

Ref. No.	Part No.	Description	Remark
R316	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R317	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R318	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R319	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R327	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
		< SWITCH >	
S304	1-571-977-11	SWITCH, TACTIL (CHANNEL -)	
S305	1-571-977-11	SWITCH, TACTIL (CHANNEL +)	
S306	1-571-977-11	SWITCH, TACTIL (INPUT SELECT)	(760, 761)
S307	1-571-977-11	SWITCH, TACTIL (TV/VTR)	
S308	1-571-977-11	SWITCH, TACTIL (TAPE SPEED)	(760, 761)
S312	1-571-977-11	SWITCH, TACTIL (TAPE SPEED)	(L5, L7)

Ref. No.	Part No.	Description	Remark
*	A-6794-139-A	LE-12 BOARD, COMPLETE	(790, 960HF/HFMX)
*	A-6794-141-A	LE-15 BOARD, COMPLETE	(960HFCS/HFPX)
		*********************	
			(Ref. No. 1,000 Series)
		< CONNECTOR >	
CN601	1-691-069-11	HOUSING, CONNECTOR 10P	
		< LED >	
D601	8-719-056-07	LED SLR-342MC3F (REW)	
D602	8-719-056-07	LED SLR-342MC3F (REW)	
D603	8-719-056-07	LED SLR-342MC3F (REW)	
D604	8-719-056-07	LED SLR-342MCF3F (REW)	
D605	8-719-056-06	LED SLR-342DCT31 (PLAY/FF/REW)	
D606	8-719-056-07	LED SLR-342MC3F (PLAY/FF)	
D607	8-719-056-07	LED SLR-342MC3F (PLAY/FF)	
D608	8-719-056-07	LED SLR-342MC3F (FF)	
D609	8-719-056-07	LED SLR-342MC3F (FF)	

Ref. No.	Part No.	Description	Remark
*	A-6782-800-A	MA-251 BOARD, COMPLETE	(790)
*	A-6782-815-A	MA-251 BOARD, COMPLETE	(960)
		**********************	
			(Ref. No. 3,000 Series)
*	3-960-273-01	SPACER, TOP END	
*	3-960-274-01	SPACER, LED	
		< BUZZER >	
BZ151	1-529-104-11	BUZZER, PIEZOELECTRIC	
		< CAPACITOR >	
C101	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C102	1-126-967-11	ELECT 47uF 20% 16V	
C103	1-164-344-11	CERAMIC CHIP 0.068uF 10% 25V	

MA-251

Ref. No.	Part No.	Description	Remark		
C104	1-124-248-00	ELECT	22uF	20%	35V
C105	1-124-584-00	ELECT	100uF	20%	10V
C106	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C107	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C108	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C109	1-124-257-00	ELECT	2.2uF	20%	50V
C111	1-124-257-00	ELECT	2.2uF	20%	50V
C114	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C133	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C134	1-124-257-00	ELECT	2.2uF	20%	50V
C135	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C136	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C137	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C138	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C139	1-126-964-11	ELECT	10uF	20%	50V
C140	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C151	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C152	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C153	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C154	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C155	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C156	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C157	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C158	1-128-057-11	ELECT	330uF	20%	6.3V
C159	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C160	1-125-507-11	CAPACITOR	0.22F		5.5V
C161	1-128-057-11	ELECT	330uF	20%	6.3V
C162	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C163	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C164	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C165	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C166	1-126-916-11	ELECT	1000uF	20%	6.3V
C201	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C202	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C203	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C204	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C205	1-163-081-00	CERAMIC CHIP	0.22uF		25V
C206	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C207	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C208	1-124-584-00	ELECT	100uF	20%	10V
C209	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C252	1-162-638-11	CERAMIC CHIP	1uF		16V
C253	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C254	1-124-589-11	ELECT	47uF	20%	16V
C255	1-137-372-11	FILM	0.022uF	5%	50V
C256	1-137-441-11	FILM	0.027uF	5%	50V
C261	1-126-176-11	ELECT	220uF	20%	10V
C262	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C264	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C266	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C267	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C273	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C275	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C291	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C292	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C294	1-124-455-00	ELECT	100uF	20%	16V
C295	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C296	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C298	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C301	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C302	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C303	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C304	1-124-589-11	ELECT	47uF	20%	16V
C305	1-124-589-11	ELECT	47uF	20%	16V(960)
C308	1-126-964-11	ELECT	10uF	20%	50V
C309	1-124-589-11	ELECT	47uF	20%	16V
C312	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C313	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C352	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C353	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C354	1-124-589-11	ELECT	47uF	20%	16V
C356	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C357	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C358	1-163-253-11	CERAMIC CHIP	120PF	5%	50V
C359	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C360	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C401	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C402	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C406	1-124-589-11	ELECT	47uF	20%	16V
C407	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C408	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C409	1-124-589-11	ELECT	47uF	20%	16V
C410	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C411	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C412	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C413	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C414	1-124-584-00	ELECT	100uF	20%	10V
C416	1-124-257-00	ELECT	2.2uF	20%	50V
C417	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C418	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C419	1-124-589-11	ELECT	47uF	20%	16V
C420	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C421	1-162-306-11	CERAMIC	0.01uF	20%	16V
C422	1-126-160-11	ELECT	1uF	20%	50V
C423	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C424	1-124-589-11	ELECT	47uF	20%	16V
C425	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V

Ref. No.	Part No.	Description			Remark
C427	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C428	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C461	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C462	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C463	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C464	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C465	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C501	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C502	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C503	1-124-589-11	ELECT	47uF	20%	16V
C510	1-104-760-11	CERAMIC CHIP	0.047uF	10%	50V
C520	1-126-162-11	ELECT	3.3uF	20%	50V
C521	1-126-096-11	ELECT	10uF	20%	35V
C522	1-137-372-11	FILM	0.022uF	5%	50V
C523	1-126-163-11	ELECT	4.7uF	20%	50V
C524	1-124-589-11	ELECT	47uF	20%	16V
C525	1-137-370-11	FILM	0.01uF	5%	50V
C530	1-126-162-11	ELECT	3.3uF	20%	50V
C531	1-126-096-11	ELECT	10uF	20%	35V
C532	1-137-372-11	FILM	0.022uF	5%	50V
C533	1-126-963-11	ELECT	4.7uF	20%	50V
C534	1-124-589-11	ELECT	47uF	20%	16V
C535	1-137-370-11	FILM	0.01uF	5%	50V
C541	1-137-372-11	FILM	0.022uF	5%	50V
C542	1-115-438-91	ELECT	100uF	20%	10V
C551	1-124-248-00	ELECT	22uF	20%	35V
C552	1-124-234-00	ELECT	22uF	20%	16V
C561	1-126-160-11	ELECT	1uF	20%	50V
C562	1-137-370-11	FILM	0.01uF	5%	50V
C563	1-126-163-11	ELECT	4.7uF	20%	50V
C565	1-163-143-00	CERAMIC CHIP	0.0012uF	5%	50V
C566	1-163-014-00	CERAMIC CHIP	0.0027uF	5%	50V
C571	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C572	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C591	1-124-584-00	ELECT	100uF	20%	10V
C592	1-115-438-91	ELECT	100uF	20%	10V
C593	1-124-589-11	ELECT	47uF	20%	16V
C610	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C631	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C632	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C633	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C634	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C635	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C636	1-126-967-11	ELECT	47uF	20%	16V
C637	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C681	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C682	1-126-967-11	ELECT	47uF	20%	16V
C683	1-126-935-11	ELECT	470uF	20%	6.3V
C684	1-126-967-11	ELECT	47uF	20%	16V

Ref. No.	Part No.	Description			Remark
C701	1-126-967-11	ELECT	47uF	20%	16V
C702	1-126-964-11	ELECT	10uF	20%	50V
C703	1-126-964-11	ELECT	10uF	20%	50V
C704	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C705	1-126-964-11	ELECT	10uF	20%	50V
C706	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C707	1-126-967-11	ELECT	47uF	20%	16V
C708	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C711	1-126-935-11	ELECT	470uF	20%	16V
C712	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C713	1-126-967-11	ELECT	47uF	20%	16V
C714	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C716	1-126-964-11	ELECT	10uF	20%	50V
C717	1-126-964-11	ELECT	10uF	20%	50V
C718	1-128-551-11	ELECT	22uF	20%	25V
C719	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C721	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C725	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C727	1-126-933-11	ELECT	100uF	20%	10V
C873	1-124-257-00	ELECT	2.2uF	20%	50V
C881	1-104-696-11	FILM	0.015uF	5%	100V(790)
C881	1-137-612-11	FILM	0.0068uF	5%	100V(960)
C882	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C883	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C884	1-126-933-11	ELECT	100uF	20%	16V
C885	1-137-431-11	FILM	560PF	5%	50V
C891	1-104-697-11	FILM	0.047uF	5%	100V(960)
C892	1-164-232-11	CERAMIC CHIP	0.01uF		50V(960)
C893	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V(960)
C894	1-124-455-00	ELECT	100uF	20%	16V(960)

< JACK >

Ref. No.	Part No.	Description
CJ621	1-764-222-11	JACK, PIN 6P (LINE-1 IN/LINE OUT)
CJ631	1-563-330-11	JACK (CONTROL S IN)
CJ632	1-566-822-21	JACK (CONTROL S OUT)

< CONNECTOR >

Ref. No.	Part No.	Description
CN101	1-506-468-11	PIN, CONNECTOR 3P
* CN271	1-766-538-11	CONNECTOR, BOARD TO BOARD 8P
* CN275	1-766-717-11	CONNECTOR, BOARD TO BOARD 5P
* CN281	1-766-537-11	CONNECTOR (HMD) 5P
* CN291	1-766-716-11	CONNECTOR, BOARD TO BOARD 3P
CN301	1-766-718-11	CONNECTOR, BOARD TO BOARD 17P
* CN501	1-766-600-11	CONNECTOR, BOARD TO BOARD 7P
* CN851	1-560-892-00	PIN, CONNECTOR 4P
* CN881	1-560-891-00	PIN, CONNECTOR 3P
CN901	1-774-461-11	CONNECTOR, FFC/FPC 15P
CN902	1-774-461-11	CONNECTOR, FFC/FPC 15P

MA-251

Ref. No.	Part No.	Description	Remark
CN903	1-774-461-11	CONNECTOR, FFC/FPC 15P	
CN904	1-766-980-71	CONNECTOR, FFC/FPC 7P	
CN905	1-506-470-11	PIN, CONNECTOR 5P	
CN906	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P	
CN907	1-506-469-11	PIN, CONNECTOR 4P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D151	8-719-200-82	DIODE 11ES2	
D152	8-719-200-82	DIODE 11ES2	
D201	8-719-200-82	DIODE 11ES2	
D202	8-719-801-48	DIODE 1SS193	
D251	8-719-801-48	DIODE 1SS193	
D261	8-719-048-26	LED GL528V1	
D265	8-719-109-93	DIODE RD6.2ES-B2	
D267	8-719-109-93	DIODE RD6.2ES-B2	
D291	8-719-977-24	DIODE DTZ9.1B	
D301	8-719-911-19	DIODE 1SS119-25	
D402	8-719-801-48	DIODE 1SS193	
D403	8-719-801-48	DIODE 1SS193	
D591	8-719-404-46	DIODE MA110	
D610	8-719-109-74	DIODE RD4.3ES-B1	
D631	8-719-110-08	DIODE RD8.2ES-B2	
D632	8-719-110-08	DIODE RD8.2ES-B2	
D633	8-719-110-08	DIODE RD8.2ES-B2	
D635	8-719-110-08	DIODE RD8.2ES-B2	
D701	8-719-200-82	DIODE 11ES2	
⚠D702	8-719-800-76	DIODE 1SS226	
D703	8-719-110-78	DIODE RD33ES-B2	
D902	8-719-200-82	DIODE 11ES2	

< IC >

Ref. No.	Part No.	Description	Remark
IC101	8-759-246-14	IC TA8823N	
IC131	8-759-364-14	IC LC7455M-TLM	
IC151	8-752-868-41	IC CXP82948-002Q	
IC152	8-759-248-87	IC MM1256XF-BE	
IC153	8-759-278-56	IC AK6440HF-E2	
IC201	8-752-871-05	IC CXP87248A-008Q	
IC251	8-759-335-76	IC uPC5023GR-089-E2	
IC291	8-759-294-26	IC BA6209-V2	
IC302	1-801-097-11	IC YC MODULE 3 (NTSC-YC)	
IC401	8-759-288-96	IC MB90089PFG-118R	
IC402	8-759-164-09	IC LA7218M	
IC461	8-759-295-66	IC BA7653AF-E2	
IC501	8-759-365-32	IC XLH7779K-VP	
IC551	8-759-089-84	IC BA7755AF	
IC631	8-759-356-27	IC NJM2129M-TE2	
IC701	8-759-701-59	IC NJM78M09FA	

< JUMPER RESISTOR >

Ref. No.	Part No.	Description	Remark
JP1	1-216-296-00	METAL CHIP 0 5% 1/8W	
JP14	1-216-296-00	METAL CHIP 0 5% 1/8W	
JP17	1-216-296-00	METAL CHIP 0 5% 1/8W	
JP31	1-216-296-00	METAL CHIP 0 5% 1/8W	
JP43	1-216-296-00	METAL CHIP 0 5% 1/8W	
JP45	1-216-296-00	METAL CHIP 0 5% 1/8W	
JP53	1-216-296-00	METAL CHIP 0 5% 1/8W	
JP54	1-216-296-00	METAL CHIP 0 5% 1/8W	
JP56	1-216-296-00	METAL CHIP 0 5% 1/8W	
JP77	1-216-296-00	METAL CHIP 0 5% 1/8W	
JP78	1-216-296-00	METAL CHIP 0 5% 1/8W	
JP81	1-216-296-00	METAL CHIP 0 5% 1/8W	
JP82	1-216-296-00	METAL CHIP 0 5% 1/8W	
JP90	1-216-296-00	METAL CHIP 0 5% 1/8W	
JP049	1-216-295-00	METAL CHIP 0 5% 1/10W	
JP083	1-216-295-00	METAL CHIP 0 5% 1/10W	

< JUMPER RESISTOR >

Ref. No.	Part No.	Description	Remark
JR101	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR131	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR132	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR151	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR152	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR252	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR253	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR301	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR303	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR305	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR404	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR461	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR576	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR631	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR633	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR635	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR702	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR703	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR706	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR707	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR710	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR716	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR885	1-216-295-00	METAL CHIP 0 5% 1/10W	(790)
JR895	1-216-295-00	METAL CHIP 0 5% 1/10W	(960)

< COIL >

Ref. No.	Part No.	Description	Remark
L101	1-408-421-00	INDUCTOR 100uH	
L151	1-408-970-21	INDUCTOR 10uH	
L201	1-408-970-21	INDUCTOR 10uH	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
L301	1-410-521-11	INDUCTOR 100uH	
L302	1-414-186-31	INDUCTOR 33uH	
L303	1-414-186-31	INDUCTOR 33uH	
L305	1-414-186-31	INDUCTOR 33uH	
L351	1-410-525-11	INDUCTOR 220uH	
L352	1-414-189-31	INDUCTOR 100uH	
L353	1-410-513-11	INDUCTOR 22uH	
L401	1-408-421-00	INDUCTOR 100uH	
L403	1-408-974-21	INDUCTOR 22uH	
L404	1-408-421-00	INDUCTOR 100uH	
L461	1-414-189-31	INDUCTOR 100uH	
L681	1-410-482-31	INDUCTOR 100uH	
L701	1-414-183-41	INDUCTOR 10uH	
L702	1-414-189-31	INDUCTOR 100uH	
L703	1-414-183-41	INDUCTOR 10uH	
L704	1-410-501-11	INDUCTOR 2.2uH	
L705	1-414-187-11	INDUCTOR 47uH	
L881	1-410-687-11	INDUCTOR 1.2mH	
L891	1-410-687-11	INDUCTOR 1.2mH	(960)
L901	1-412-364-11	INDUCTOR 0uH	
		< PIN CABLE >	
P701	1-555-110-00	CABLE, PIN	
		< PHOTO INTERRUPTER >	
PH261	8-749-010-19	PHOTO INTERRUPTER GP3S113	
PH262	8-749-010-20	PHOTO INTERRUPTER GP3S114	
		< IC LINK >	
⚠PS271	1-532-727-11	LINK, IC ICP-N5 (0.25A)	
⚠PS885	1-532-727-11	LINK, IC ICP-N5 (0.25A)	
		< THERMISTOR >	
⚠PTH592	1-202-855-00	THERMISTOR, POSITIVE	
		< TRANSISTOR >	
Q131	8-729-010-05	TRANSISTOR MSB709-RT1	
Q132	8-729-421-19	TRANSISTOR UN2213	
Q201	8-729-010-25	TRANSISTOR MSD601-RT1	
Q202	8-729-901-06	TRANSISTOR DTA144EK	
Q261	8-729-025-92	PHOTO TRANSISTOR PT380F	
Q262	8-729-025-92	PHOTO TRANSISTOR PT380F	
Q263	8-729-281-53	TRANSISTOR 2SC1815-GR	
Q301	8-729-421-19	TRANSISTOR UN2213	
Q306	8-729-421-19	TRANSISTOR UN2213	
Q352	8-729-010-29	TRANSISTOR MSD601-RST1	
Q353	8-729-010-29	TRANSISTOR MSD601-RST1	
Q402	8-729-901-06	TRANSISTOR DTA144EK	
Q404	8-729-010-05	TRANSISTOR MSB709-RT1	
Q406	8-729-010-05	TRANSISTOR MSB709-RT1	
Q407	8-729-010-05	TRANSISTOR MSB709-RT1	
Q413	8-729-010-25	TRANSISTOR MSD601-RT1	
Q591	8-729-804-41	TRANSISTOR 2SB1122-S	
Q592	8-729-820-68	TRANSISTOR 2SD1802FA-S	
Q681	8-729-010-05	TRANSISTOR MSB709-RT1	
Q701	8-729-421-19	TRANSISTOR UN2213	
⚠Q703	8-729-173-38	TRANSISTOR 2SA733-K	
Q705	8-729-010-29	TRANSISTOR MSD601-RST1	
Q707	8-729-010-05	TRANSISTOR MSB709-RT1	
Q708	8-729-010-05	TRANSISTOR MSB709-RT1	
Q709	8-729-010-29	TRANSISTOR MSD601-RST1	
Q715	8-729-901-06	TRANSISTOR DTA144EK	
Q716	8-729-901-06	TRANSISTOR DTA144EK	
Q717	8-729-421-19	TRANSISTOR UN2213	
Q881	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q	
Q882	8-729-900-51	TRANSISTOR DTA114TK	
Q886	8-729-010-29	TRANSISTOR MSD601-RST1	
Q891	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q	(960)
Q892	8-729-900-51	TRANSISTOR DTA114TK	(960)
		< RESISTOR >	
R101	1-216-119-00	METAL CHIP 820K 5% 1/10W	
R102	1-216-093-00	METAL CHIP 68K 5% 1/10W	
R103	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R104	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R105	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R106	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R107	1-216-186-00	METAL GLAZE 330 5% 1/8W	
R108	1-216-121-91	METAL GLAZE 1M 5% 1/10W	
R111	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R131	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R132	1-216-121-91	METAL GLAZE 1M 5% 1/10W	
R133	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R135	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R136	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R137	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R138	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R139	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R140	1-216-206-00	METAL GLAZE 2.2K 5% 1/8W	
R141	1-216-222-00	METAL GLAZE 10K 5% 1/8W	
R151	1-216-095-00	METAL CHIP 82K 5% 1/10W	
R152	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R153	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R154	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R157	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R158	1-216-095-00	METAL CHIP 82K 5% 1/10W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

MA-251

Ref. No.	Part No.	Description			Remark
R159	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R160	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R161	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R162	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R163	1-216-073-00	METAL CHIP	10K	5%	1/10W
R164	1-216-073-00	METAL CHIP	10K	5%	1/10W
R165	1-216-073-00	METAL CHIP	10K	5%	1/10W
R166	1-216-073-00	METAL CHIP	10K	5%	1/10W
R167	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R168	1-216-095-00	METAL CHIP	82K	5%	1/10W
R169	1-216-113-00	METAL CHIP	470K	5%	1/10W
R201	1-216-073-00	METAL CHIP	10K	5%	1/10W
R203	1-216-073-00	METAL CHIP	10K	5%	1/10W
R204	1-216-073-00	METAL CHIP	10K	5%	1/10W
R205	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R206	1-216-073-00	METAL CHIP	10K	5%	1/10W
R207	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R208	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R209	1-216-073-00	METAL CHIP	10K	5%	1/10W
R210	1-216-073-00	METAL CHIP	10K	5%	1/10W
R211	1-216-101-00	METAL CHIP	150K	5%	1/10W
R212	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R213	1-216-077-00	METAL CHIP	15K	5%	1/10W
R214	1-216-085-00	METAL CHIP	33K	5%	1/10W
R215	1-216-095-00	METAL CHIP	82K	5%	1/10W
R218	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R219	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R233	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R234	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R251	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R252	1-216-079-00	METAL CHIP	18K	5%	1/10W
R253	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R254	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R255	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R256	1-216-103-91	METAL GLAZE	180K	5%	1/10W
R261	1-249-400-11	CARBON	39	5%	1/4W
R262	1-249-400-11	CARBON	39	5%	1/4W
R263	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R264	1-216-107-00	METAL CHIP	270K	5%	1/10W
R265	1-216-107-00	METAL CHIP	270K	5%	1/10W
R266	1-249-413-11	CARBON	470	5%	1/4W
R267	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R268	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R271	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R274	1-216-083-00	METAL CHIP	27K	5%	1/10W
R275	1-216-093-00	METAL CHIP	68K	5%	1/10W
R276	1-216-056-00	METAL GLAZE	2K	5%	1/10W
R277	1-216-068-00	METAL CHIP	6.2K	5%	1/10W
R278	1-216-075-00	METAL CHIP	12K	5%	1/10W

Ref. No.	Part No.	Description			Remark	
R281	1-216-238-91	METAL GLAZE	47K	5%	1/8W	
R282	1-216-238-91	METAL GLAZE	47K	5%	1/8W	
R283	1-216-238-91	METAL GLAZE	47K	5%	1/8W	
R284	1-216-238-91	METAL GLAZE	47K	5%	1/8W	
R293	1-216-295-00	METAL CHIP	0	5%	1/10W	
R301	1-216-295-00	METAL CHIP	0	5%	1/10W	
R302	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	(790)
R302	1-216-052-00	METAL CHIP	1.3K	5%	1/10W	(960)
R303	1-216-031-00	METAL CHIP	180	5%	1/10W	
R304	1-208-798-11	METAL GLAZE	4.7K	0.50%	1/10W	
R305	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R306	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R313	1-216-041-00	METAL CHIP	470	5%	1/10W	
R314	1-216-240-00	METAL GLAZE	56K	5%	1/8W	
R315	1-216-105-91	METAL GLAZE	220K	5%	1/10W	
R317	1-216-107-00	METAL CHIP	270K	5%	1/10W	
R335	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R351	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R352	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R353	1-216-045-00	METAL CHIP	680	5%	1/10W	
R354	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R355	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R356	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R357	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R358	1-216-035-00	METAL CHIP	270	5%	1/10W	
R401	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R404	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R407	1-249-414-11	CARBON	560	5%	1/4W	
R408	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R409	1-216-063-91	METAL GLAZE	3.9K	5%	1/10W	
R410	1-216-043-91	METAL GLAZE	560	5%	1/10W	
R411	1-216-025-91	METAL GLAZE	100	5%	1/10W	
R412	1-216-295-00	METAL CHIP	0	5%	1/10W	
R413	1-216-295-00	METAL CHIP	0	5%	1/10W	
R414	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R415	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R416	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R417	1-216-033-00	METAL CHIP	220	5%	1/10W	
R418	1-216-033-00	METAL CHIP	220	5%	1/10W	
R421	1-216-230-00	METAL GLAZE	22K	5%	1/8W	
R423	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R461	1-216-295-00	METAL CHIP	0	5%	1/10W	
R462	1-216-295-00	METAL CHIP	0	5%	1/10W	
R501	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R502	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R503	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R504	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R505	1-216-295-00	METAL CHIP	0	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R506	1-216-295-00	METAL CHIP	0	5%	1/10W	
R507	1-216-295-00	METAL CHIP	0	5%	1/10W	
R510	1-216-129-00	METAL CHIP	2.2M	5%	1/10W	
R514	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R515	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R521	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R522	1-216-050-00	METAL GLAZE	1.1K	5%	1/10W	
R523	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R524	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R525	1-208-809-11	METAL GLAZE	13K	0.50%	1/10W	
R531	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R532	1-216-050-00	METAL GLAZE	1.1K	5%	1/10W	
R533	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R534	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R535	1-208-806-11	METAL GLAZE	10K	0.50%	1/10W	
R541	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R551	1-216-129-00	METAL CHIP	2.2M	5%	1/10W	
R561	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R562	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R563	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R564	1-216-041-00	METAL CHIP	470	5%	1/10W	
R565	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R566	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R567	1-216-295-00	METAL CHIP	0	5%	1/10W	
R571	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R572	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R573	1-216-214-00	METAL GLAZE	4.7K	5%	1/8W	
R575	1-216-295-00	METAL CHIP	0	5%	1/10W	
R591	1-249-421-11	CARBON	2.2K	5%	1/4W	
R592	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R601	1-216-022-00	METAL CHIP	75	5%	1/10W	
R611	1-216-041-00	METAL CHIP	470	5%	1/10W	
R612	1-216-041-00	METAL CHIP	470	5%	1/10W	
R631	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R681	1-216-037-00	METAL CHIP	330	5%	1/10W	
R683	1-249-407-11	CARBON	150	5%	1/4W	
R684	1-249-408-11	CARBON	180	5%	1/4W	
R685	1-216-021-00	METAL CHIP	68	5%	1/10W	
R701	1-216-041-00	METAL CHIP	470	5%	1/10W	
R702	1-216-041-00	METAL CHIP	470	5%	1/10W	
R703	1-249-404-00	CARBON	82	5%	1/4W	
R704	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R706	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R713	1-216-041-00	METAL CHIP	470	5%	1/10W	
R714	1-216-041-00	METAL CHIP	470	5%	1/10W	
R715	1-216-025-91	METAL GLAZE	100	5%	1/10W	
R716	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R717	1-216-073-00	METAL CHIP	10K	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R719	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R720	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R721	1-216-037-00	METAL CHIP	330	5%	1/10W	
R722	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R725	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R726	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R733	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R734	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R736	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R737	1-216-295-00	METAL CHIP	0	5%	1/10W	
R740	1-216-093-00	METAL CHIP	68K	5%	1/10W	
R747	1-249-421-11	CARBON	2.2K	5%	1/4W	
R748	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R749	1-249-437-11	CARBON	47K	5%	1/4W	
R874	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R881	1-216-081-00	METAL CHIP	22K	5%	1/10W	
⚠R882	1-249-389-11	CARBON	4.7	5%	1/4W	F(790)
⚠R882	1-249-395-11	CARBON	15	5%	1/4W	F(960)
R885	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R886	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R887	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R891	1-216-083-00	METAL CHIP	27K	5%	1/10W	(960)
⚠R892	1-249-394-11	CARBON	12	5%	1/4W	F(960)

< RF MODULATOR >

Ref. No.	Part No.	Description	Remark
⚠RF701	1-466-989-11	MODULATOR, RF	

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV521	1-241-763-11	RES, ADJ, CERMET 4.7K	
RV531	1-241-763-11	RES, ADJ, CERMET 4.7K	
RV541	1-241-764-11	RES, ADJ, CERMET 10K	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S251	1-570-953-11	SWITCH, PUSH (1 KEY)(REC PRF)	

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
T881	1-423-414-11	TRANSFORMER, BIAS OSCILLATION	(790)
T881	1-423-413-11	TRANSFORMER, BIAS OSCILLATION	(960)
T891	1-423-415-11	TRANSFORMER, BIAS OSCILLATION	(960)

< TUNER >

Ref. No.	Part No.	Description	Remark
⚠TU701	8-598-342-00	TUNER BTF-WA406	

< VIBRATOR >

Ref. No.	Part No.	Description	Remark
X151	1-579-463-11	VIBRATOR, CRYSTAL (32.768kHz)	
X201	1-760-494-11	VIBRATOR, CRYSTAL (16MHz)	
X401	1-577-381-11	VIBRATOR, CRYSTAL (14MHz)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
X402	1-577-165-11	VIBLATOR, CERAMIC (500kHz)			

Ref. No.	Part No.	Description
*	A-6782-792-A	MA-252 BOARD, COMPLETE (760, 761)
*	A-6782-802-A	MA-252 BOARD, COMPLETE (L5)
*	A-6782-817-A	MA-252 BOARD, COMPLETE (L7)

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(Ref. No. 4,000 Series)

Ref. No.	Part No.	Description
*	3-960-273-01	SPACER, TOP END
*	3-960-274-01	SPACER, LED

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C101	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C102	1-126-967-11	ELECT	47uF	20%	16V
C103	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C104	1-124-248-00	ELECT	22uF	20%	35V
C105	1-124-584-00	ELECT	100uF	20%	10V
C106	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C107	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C108	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C109	1-124-257-00	ELECT	2.2uF	20%	50V
C111	1-124-257-00	ELECT	2.2uF	20%	50V
C114	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C133	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (760, 761)
C134	1-124-257-00	ELECT	2.2uF	20%	50V (760, 761)
C135	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V (760, 761)
C136	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V (760, 761)
C137	1-109-982-11	CERAMIC CHIP	1uF	10%	10V (760, 761)
C138	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V (760, 761)
C139	1-126-964-11	ELECT	10uF	20%	50V (760, 761)
C140	1-163-038-91	CERAMIC CHIP	0.1uF		25V (760, 761)
C160	1-125-507-11	CAPACITOR	0.22F		5.5V
C201	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C202	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C203	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C204	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C205	1-163-081-00	CERAMIC CHIP	0.22uF		25V
C206	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C207	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C208	1-124-584-00	ELECT	100uF	20%	10V
C209	1-163-038-91	CERAMIC CHIP	0.1uF		25V

Ref. No.	Part No.	Description			Remark
C210	1-124-589-11	ELECT	47uF	20%	16V
C211	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C214	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C215	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C216	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C252	1-162-638-11	CERAMIC CHIP	1uF		16V
C253	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C254	1-124-589-11	ELECT	47uF	20%	16V
C255	1-137-372-11	FILM	0.022uF	5%	50V
C256	1-137-441-11	FILM	0.027uF	5%	50V
C261	1-126-176-11	ELECT	220uF	20%	10V
C262	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C264	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C266	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C267	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C273	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C275	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C291	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C292	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C294	1-124-455-00	ELECT	100uF	20%	16V
C295	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C296	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C298	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C301	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C302	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C303	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C304	1-124-589-11	ELECT	47uF	20%	16V
C305	1-124-589-11	ELECT	47uF	20%	16V (760, 761)
C308	1-126-964-11	ELECT	10uF	20%	50V
C309	1-124-589-11	ELECT	47uF	20%	16V
C312	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C313	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C352	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C353	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C354	1-124-589-11	ELECT	47uF	20%	16V
C356	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C357	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C358	1-163-253-11	CERAMIC CHIP	120PF	5%	50V
C359	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C360	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C401	1-124-589-11	ELECT	47uF	20%	16V
C402	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C403	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C404	1-163-102-00	CERAMIC CHIP	24PF	5%	50V
C409	1-124-589-11	ELECT	47uF	20%	16V
C410	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C417	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C418	1-126-160-11	ELECT	1uF	20%	50V

Ref. No.	Part No.	Description		Remark	
C420	1-130-481-00	MYLAR	0.0068uF	5%	50V
C421	1-124-499-11	ELECT, NONPOLAR	1uF	20%	50V
C422	1-130-487-00	MYLAR	0.022uF	5%	50V
C423	1-124-465-00	ELECT	0.47uF	20%	50V
C424	1-163-102-00	CERAMIC CHIP	24PF	5%	50V
C427	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C461	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C462	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C463	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C464	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C465	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
				(760, 761)	
C501	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
				(760, 761, L7)	
C502	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
				(760, 761, L7)	
C503	1-124-589-11	ELECT	47uF	20%	16V
				(760, 761, L7)	
C510	1-104-760-11	CERAMIC CHIP	0.047uF	10%	50V
				(760, 761, L5)	
C520	1-126-162-11	ELECT	3.3uF	20%	50V
				(760, 761, L7)	
C521	1-126-096-11	ELECT	10uF	20%	35V
				(760, 761, L7)	
C522	1-137-372-11	FILM	0.022uF	5%	50V
				(760, 761, L7)	
C523	1-126-163-11	ELECT	4.7uF	20%	50V
				(760, 761, L7)	
C524	1-124-589-11	ELECT	47uF	20%	16V
				(760, 761, L7)	
C525	1-137-370-11	FILM	0.01uF	5%	50V
				(760, 761, L7)	
C530	1-126-162-11	ELECT	3.3uF	20%	50V
				(760, 761, L7)	
C531	1-126-096-11	ELECT	10uF	20%	35V
				(760, 761, L7)	
C532	1-137-372-11	FILM	0.022uF	5%	50V
				(760, 761, L7)	
C533	1-126-963-11	ELECT	4.7uF	20%	50V
				(760, 761, L7)	
C534	1-124-589-11	ELECT	47uF	20%	16V
				(760, 761, L7)	
C535	1-137-370-11	FILM	0.01uF	5%	50V
				(760, 761, L7)	
C541	1-137-372-11	FILM	0.022uF	5%	50V
				(760, 761, L7)	
C542	1-115-438-91	ELECT	100uF	20%	10V
				(760, 761, L7)	
C551	1-124-248-00	ELECT	22uF	20%	35V
				(760, 761, L7)	
C552	1-124-234-00	ELECT	22uF	20%	16V
				(760, 761, L7)	
C561	1-126-160-11	ELECT	1uF	20%	50V
C562	1-137-370-11	FILM	0.01uF	5%	50V
C563	1-126-163-11	ELECT	4.7uF	20%	50V
C565	1-163-143-00	CERAMIC CHIP	0.0012uF	5%	50V
C566	1-163-014-00	CERAMIC CHIP	0.0027uF	5%	50V
C571	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
				(760, 761, L7)	
C572	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
				(760, 761, L7)	
C591	1-124-584-00	ELECT	100uF	20%	10V
				(760, 761, L7)	
C592	1-115-438-91	ELECT	100uF	20%	10V
				(760, 761, L7)	
C593	1-124-589-11	ELECT	47uF	20%	16V
				(760, 761, L7)	
C610	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C681	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C682	1-126-967-11	ELECT	47uF	20%	16V
C683	1-126-935-11	ELECT	470uF	20%	6.3V
C684	1-126-967-11	ELECT	47uF	20%	16V
C701	1-126-967-11	ELECT	47uF	20%	16V
C702	1-126-964-11	ELECT	10uF	20%	50V
C703	1-126-964-11	ELECT	10uF	20%	50V
				(760, 761, L7)	
C704	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C705	1-126-964-11	ELECT	10uF	20%	50V
C706	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C707	1-126-967-11	ELECT	47uF	20%	16V
C708	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C711	1-126-935-11	ELECT	470uF	20%	16V
C712	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C713	1-126-967-11	ELECT	47uF	20%	16V
C714	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C716	1-126-964-11	ELECT	10uF	20%	50V
				(760, 761, L7)	
C717	1-126-964-11	ELECT	10uF	20%	50V
C718	1-128-551-11	ELECT	22uF	20%	25V
				(760, 761, L7)	
C719	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C721	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C725	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
				(760, 761, L7)	

Ref. No.	Part No.	Description	Remark
C727	1-126-933-11	ELECT 100uF 20% 10V	
C730	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(L5)
C731	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(L5)
C732	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(L5)
C733	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(L5)
C734	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	(L5)
C735	1-163-031-11	CERAMIC CHIP 0.01uF 50V	(L5)
C851	1-126-157-11	ELECT 10uF 20% 16V	(L5)
C852	1-124-234-00	ELECT 22uF 20% 16V	(L5)
C853	1-124-234-00	ELECT 22uF 20% 16V	(L5)
C854	1-124-252-00	ELECT 0.33uF 20% 50V	(L5)
C855	1-126-157-11	ELECT 10uF 20% 16V	(L5)
C856	1-126-160-11	ELECT 1uF 20% 50V	(L5)
C858	1-126-160-11	ELECT 1uF 20% 50V	(L5)
C864	1-126-162-11	ELECT 3.3uF 20% 50V	(L5)
C871	1-163-141-00	CERAMIC CHIP 0.001uF 5% 50V	(L5)
C872	1-163-141-00	CERAMIC CHIP 0.001uF 5% 50V	(L5)
C873	1-124-257-00	ELECT 2.2uF 20% 50V	
C881	1-104-696-11	FILM 0.015uF 5% 100V	
C882	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C883	1-163-011-11	CERAMIC CHIP 0.0015uF 10% 50V	
C884	1-126-933-11	ELECT 100uF 20% 16V	
C885	1-137-431-11	FILM 560PF 5% 50V	

< JACK >

Ref. No.	Part No.	Description	Remark
CJ621	1-764-222-11	JACK, PIN 6P (LINE-1 IN/LINE OUT)	(760,761,L7)
CJ621	1-764-801-11	JACK, PIN 5P (LINE-1 IN/LINE OUT)	(L5)

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN101	1-506-468-11	PIN, CONNECTOR 3P	
* CN271	1-766-538-11	CONNECTOR, BOARD TO BOARD 8P	
* CN275	1-766-717-11	CONNECTOR, BOARD TO BOARD 5P	
* CN281	1-766-537-11	CONNECTOR (HMD) 5P	
* CN291	1-766-716-11	CONNECTOR, BOARD TO BOARD 3P	
CN301	1-766-718-11	CONNECTOR, BOARD TO BOARD 17P	
* CN501	1-766-600-11	CONNECTOR, BOARD TO BOARD 7P	
* CN851	1-560-892-00	PIN, CONNECTOR 4P	
* CN881	1-560-891-00	PIN, CONNECTOR 3P	
CN903	1-774-461-11	CONNECTOR, FFC/FPC 15P	
CN905	1-506-470-11	PIN, CONNECTOR 5P	(760,761)
CN906	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P	
CN908	1-506-473-11	PIN, CONNECTOR 8P	

< TRIMMER >

Ref. No.	Part No.	Description	Remark
CT401	1-141-334-11	CAP, VAR, TRIMMER	

< DIODE >

Ref. No.	Part No.	Description	Remark
D201	8-719-200-82	DIODE 11ES2	
D202	8-719-801-48	DIODE 1SS193	
D203	8-719-801-78	DIODE 1SS184	(L5)
D204	8-719-200-82	DIODE 11ES2	
D251	8-719-801-48	DIODE 1SS193	
D261	8-719-048-26	LED GL528V1	
D265	8-719-109-93	DIODE RD6.2ES-B2	
D267	8-719-109-93	DIODE RD6.2ES-B2	
D291	8-719-977-24	DIODE DTZ9.1B	
D403	8-719-801-48	DIODE 1SS193	
D591	8-719-404-46	DIODE MA110	(760,761,L7)
D610	8-719-109-74	DIODE RD4.3ES-B1	
D701	8-719-200-82	DIODE 11ES2	
⚠D702	8-719-800-76	DIODE 1SS226	
D703	8-719-110-78	DIODE RD33ES-B2	
D708	8-719-911-19	DIODE 1SS119-25	(L5)
D853	8-719-911-19	DIODE 1SS119-25	(L5)
D902	8-719-200-82	DIODE 11ES2	

< IC >

Ref. No.	Part No.	Description	Remark
IC101	8-759-246-14	IC TA8823N	
IC131	8-759-364-14	IC LC7455M-TLM	(760,761)
IC201	8-752-869-65	IC CXP87360-040Q	(L5,L7)
IC201	8-752-869-64	IC CXP87360-039Q	(760,761)
IC202	8-759-248-87	IC MM1256XF-BE	
IC203	8-759-278-56	IC AK6440HF-E2	
IC251	8-759-335-76	IC uPC5023GR-089-E2	
IC291	8-759-294-26	IC BA6209-V2	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
IC302	1-801-097-11	IC YC MODULE 3 (NTSC-YC)	
IC401	8-759-289-30	IC LC74761M-9075-TLM	
IC461	8-759-295-66	IC BA7653AF-E2	
IC501	8-759-365-32	IC XLH7779K-VP	(760, 761, L7)
IC551	8-759-089-84	IC BA7755AF	(760, 761, L7)
IC701	8-759-701-59	IC NJM78M09FA	(760, 761, L7)
IC851	8-759-268-02	IC BA7796FS-E2	(L5)
		< JUMPER RESISTOR >	
JP21	1-216-295-00	METAL CHIP 0 5% 1/10W	(L5)
JP22	1-216-295-00	METAL CHIP 0 5% 1/10W	(L5)
JP95	1-216-295-00	METAL CHIP 0 5% 1/10W	(L5)
JP96	1-216-295-00	METAL CHIP 0 5% 1/10W	(L5)
JP001	1-216-296-00	METAL CHIP 0 5% 1/8W	
JP014	1-216-296-00	METAL CHIP 0 5% 1/8W	
JP017	1-216-296-00	METAL CHIP 0 5% 1/8W	
JP021	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761, L7)
JP022	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761, L7)
JP031	1-216-296-00	METAL CHIP 0 5% 1/8W	
JP045	1-216-296-00	METAL CHIP 0 5% 1/8W	
JP057	1-216-296-00	METAL CHIP 0 5% 1/8W	
		< JUMPER RESISTOR >	
JR101	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR131	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761)
JR132	1-216-296-00	METAL CHIP 0 5% 1/8W	(760, 761)
JR202	1-216-295-00	METAL CHIP 0 5% 1/10W	(L5)
JR203	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761, L7)
JR204	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761, L7)
JR205	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR212	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761)
JR213	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761, L7)
JR221	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761)
JR222	1-216-296-00	METAL CHIP 0 5% 1/8W	(L5, L7)
JR224	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR252	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR253	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR301	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR303	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR305	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR402	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR403	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR404	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR461	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR576	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761, L7)
JR701	1-216-295-00	METAL CHIP 0 5% 1/10W	(L5)
JR702	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761, L7)
JR706	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761, L7)
JR707	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761, L7)
JR710	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761, L7)
JR716	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761, L7)
JR722	1-216-295-00	METAL CHIP 0 5% 1/10W	(L5)
JR737	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761, L7)
JR738	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761, L7)
JR739	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761, L7)
JR741	1-216-295-00	METAL CHIP 0 5% 1/10W	(760, 761, L7)
JR851	1-216-295-00	METAL CHIP 0 5% 1/10W	(L5)
JR854	1-216-295-00	METAL CHIP 0 5% 1/10W	(L5)
JR856	1-216-295-00	METAL CHIP 0 5% 1/10W	(L5)
JR859	1-216-295-00	METAL CHIP 0 5% 1/10W	(L5)
JR885	1-216-295-00	METAL CHIP 0 5% 1/10W	
		< COIL >	
L101	1-408-421-00	INDUCTOR 100uH	
L201	1-408-970-21	INDUCTOR 10uH	
L301	1-410-521-11	INDUCTOR 100uH	
L302	1-414-186-31	INDUCTOR 33uH	
L303	1-414-186-31	INDUCTOR 33uH	
L305	1-414-186-31	INDUCTOR 33uH	
L351	1-410-525-11	INDUCTOR 220uH	
L352	1-414-189-31	INDUCTOR 100uH	
L353	1-410-513-11	INDUCTOR 22uH	
L401	1-408-421-00	INDUCTOR 100uH	

Ref. No.	Part No.	Description	Remark
L402	1-408-421-00	INDUCTOR 100uH	
L404	1-410-506-11	INDUCTOR 5.6uH	
L461	1-414-189-31	INDUCTOR 100uH	
L681	1-410-482-31	INDUCTOR 100uH	
L701	1-414-183-41	INDUCTOR 10uH	(760,761,L7)
L702	1-414-189-31	INDUCTOR 100uH	
L703	1-414-183-41	INDUCTOR 10uH	
L704	1-410-501-11	INDUCTOR 2.2uH	
L705	1-414-187-11	INDUCTOR 47uH	
L708	1-410-501-11	INDUCTOR 2.2uH	(L5)
L709	1-410-501-11	INDUCTOR 2.2uH	(L5)
L851	1-410-482-31	INDUCTOR 100uH	(L5)
L881	1-410-687-11	INDUCTOR 1.2mH	
L901	1-412-364-11	INDUCTOR 0uH	

< PIN CABLE >

Ref. No.	Part No.	Description	Remark
P701	1-555-110-00	CABLE, PIN	(760,761,L7)

< PHOTO INTERRUPTER >

Ref. No.	Part No.	Description	Remark
PH261	8-749-010-19	PHOTO INTERRUPTER GP3S113	
PH262	8-749-010-20	PHOTO INTERRUPTER GP3S114	

< IC LINK >

Ref. No.	Part No.	Description	Remark
⚠PS271	1-532-727-11	LINK, IC ICP-N5 (0.25A)	
⚠PS885	1-532-727-11	LINK, IC ICP-N5 (0.25A)	

< THERMISTOR >

Ref. No.	Part No.	Description	Remark
⚠PTH592	1-202-855-00	THERMISTOR, POSITIVE	(760,761,L7)

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q131	8-729-010-05	TRANSISTOR MSB709-RT1	(760,761)
Q132	8-729-421-19	TRANSISTOR UN2213	(760,761)
Q201	8-729-010-25	TRANSISTOR MSD601-RT1	
Q202	8-729-901-06	TRANSISTOR DTA144EK	
Q261	8-729-025-92	PHOTO TRANSISTOR PT380F	
Q262	8-729-025-92	PHOTO TRANSISTOR PT380F	
Q263	8-729-281-53	TRANSISTOR 2SC1815-GR	
Q301	8-729-421-19	TRANSISTOR UN2213	
Q306	8-729-421-19	TRANSISTOR UN2213	
Q352	8-729-010-29	TRANSISTOR MSD601-RST1	
Q353	8-729-010-29	TRANSISTOR MSD601-RST1	
Q404	8-729-010-05	TRANSISTOR MSB709-RT1	
Q405	8-729-010-05	TRANSISTOR MSB709-RT1	
Q406	8-729-010-05	TRANSISTOR MSB709-RT1	
Q591	8-729-804-41	TRANSISTOR 2SB1122-S	(760,761,L7)
Q592	8-729-820-68	TRANSISTOR 2SD1802FA-S	(760,761,L7)
Q681	8-729-010-05	TRANSISTOR MSB709-RT1	
Q701	8-729-421-19	TRANSISTOR UN2213	(760,761,L7)
⚠Q703	8-729-173-38	TRANSISTOR 2SA733-K	
Q705	8-729-010-29	TRANSISTOR MSD601-RST1	(760,761,L7)
Q707	8-729-010-05	TRANSISTOR MSB709-RT1	(760,761,L7)
Q708	8-729-010-05	TRANSISTOR MSB709-RT1	(760,761,L7)
Q709	8-729-010-29	TRANSISTOR MSD601-RST1	(760,761,L7)
Q710	8-729-010-05	TRANSISTOR MSB709-RT1	(L5)
Q711	8-729-424-67	TRANSISTOR UN2216	(L5)
Q714	8-729-010-05	TRANSISTOR MSB709-RT1	(L5)
Q853	8-729-424-67	TRANSISTOR UN2216	(L5)
Q881	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q	
Q882	8-729-900-51	TRANSISTOR DTA114TK	
Q886	8-729-010-29	TRANSISTOR MSD601-RST1	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R101	1-216-119-00	METAL CHIP 820K 5% 1/10W	
R102	1-216-093-00	METAL CHIP 68K 5% 1/10W	
R103	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R104	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R105	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R106	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R107	1-216-186-00	METAL GLAZE 330 5% 1/8W	
R108	1-216-121-91	METAL GLAZE 1M 5% 1/10W	
R111	1-216-097-91	METAL GLAZE 100K 5% 1/10W	
R131	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	(760,761)
R132	1-216-121-91	METAL GLAZE 1M 5% 1/10W	(760,761)
R133	1-216-222-00	METAL GLAZE 10K 5% 1/8W	(760,761)
R135	1-216-025-91	METAL GLAZE 100 5% 1/10W	(760,761)
R136	1-216-049-91	METAL GLAZE 1K 5% 1/10W	(760,761)
R137	1-216-083-00	METAL CHIP 27K 5% 1/10W	(760,761)
R138	1-216-079-00	METAL CHIP 18K 5% 1/10W	(760,761)
R139	1-216-238-91	METAL GLAZE 47K 5% 1/8W	(760,761)
R140	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	(760,761)
R141	1-216-073-00	METAL CHIP 10K 5% 1/10W	(760,761)
R201	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R202	1-216-295-00	METAL CHIP 0 5% 1/10W	(760,761)
R202	1-216-081-00	METAL CHIP 22K 5% 1/10W	(L5)
R202	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	(L7)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description				Remark
R203	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R204	1-216-073-00	METAL CHIP	10K	5%	1/10W	(L5, L7)
R206	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R207	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R208	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R209	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R210	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R211	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R212	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R213	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R214	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R215	1-216-095-00	METAL CHIP	82K	5%	1/10W	
R216	1-216-083-00	METAL CHIP	27K	5%	1/10W	(L5)
R217	1-216-085-00	METAL CHIP	33K	5%	1/10W	(L5)
R218	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R219	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R220	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R221	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R222	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R223	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R224	1-216-025-91	METAL GLAZE	100	5%	1/10W	
R225	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R226	1-216-025-91	METAL GLAZE	100	5%	1/10W	
R227	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R228	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R229	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R230	1-216-105-91	METAL GLAZE	220K	5%	1/10W	
R233	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R234	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R251	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R252	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R253	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	
R254	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R255	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R256	1-216-103-91	METAL GLAZE	180K	5%	1/10W	
R261	1-249-400-11	CARBON	39	5%	1/4W	
R262	1-249-400-11	CARBON	39	5%	1/4W	
R263	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R264	1-216-107-00	METAL CHIP	270K	5%	1/10W	
R265	1-216-107-00	METAL CHIP	270K	5%	1/10W	
R266	1-249-413-11	CARBON	470	5%	1/4W	
R267	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R268	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R271	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R274	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R275	1-216-093-00	METAL CHIP	68K	5%	1/10W	
R276	1-216-056-00	METAL GLAZE	2K	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R277	1-216-068-00	METAL CHIP	6.2K	5%	1/10W	
R278	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R281	1-216-238-91	METAL GLAZE	47K	5%	1/8W	
R282	1-216-238-91	METAL GLAZE	47K	5%	1/8W	
R283	1-216-238-91	METAL GLAZE	47K	5%	1/8W	
R284	1-216-238-91	METAL GLAZE	47K	5%	1/8W	
R293	1-216-295-00	METAL CHIP	0	5%	1/10W	
R301	1-216-295-00	METAL CHIP	0	5%	1/10W	
R302	1-216-052-00	METAL CHIP	1.3K	5%	1/10W	(L5)
R302	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	(760, 761, L7)
R303	1-216-031-00	METAL CHIP	180	5%	1/10W	
R304	1-208-798-11	METAL GLAZE	4.7K	0.50%	1/10W	
R305	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R306	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R313	1-216-041-00	METAL CHIP	470	5%	1/10W	
R314	1-216-240-00	METAL GLAZE	56K	5%	1/8W	
R315	1-216-105-91	METAL GLAZE	220K	5%	1/10W	
R317	1-247-889-00	CARBON	270K	5%	1/4W	
R335	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R351	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R352	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R353	1-216-045-00	METAL CHIP	680	5%	1/10W	
R354	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R355	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R356	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R357	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R358	1-216-035-00	METAL CHIP	270	5%	1/10W	
R413	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R414	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R415	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R416	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R417	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R418	1-216-045-00	METAL CHIP	680	5%	1/10W	
R419	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R420	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R421	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R423	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R425	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R431	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R432	1-216-121-91	METAL GLAZE	1M	5%	1/10W	
R461	1-216-295-00	METAL CHIP	0	5%	1/10W	
R462	1-216-295-00	METAL CHIP	0	5%	1/10W	
R501	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	(760, 761, L7)
R502	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	(760, 761, L7)

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Ref. No.	Part No.	Description			Remark
R505	1-216-295-00	METAL CHIP	0	5%	1/10W (760, 761, L7)
R506	1-216-295-00	METAL CHIP	0	5%	1/10W (760, 761, L7)
R507	1-216-295-00	METAL CHIP	0	5%	1/10W (760, 761, L7)
R510	1-216-129-00	METAL CHIP	2.2M	5%	1/10W (760, 761, L7)
R514	1-216-049-91	METAL GLAZE	1K	5%	1/10W (760, 761, L7)
R515	1-216-049-91	METAL GLAZE	1K	5%	1/10W (760, 761, L7)
R521	1-216-073-00	METAL CHIP	10K	5%	1/10W (760, 761, L7)
R522	1-216-050-00	METAL GLAZE	1.1K	5%	1/10W (760, 761, L7)
R523	1-216-079-00	METAL CHIP	18K	5%	1/10W (760, 761, L7)
R524	1-216-067-00	METAL CHIP	5.6K	5%	1/10W (760, 761, L7)
R525	1-208-809-11	METAL GLAZE	13K	0.50%	1/10W (760, 761, L7)
R531	1-216-073-00	METAL CHIP	10K	5%	1/10W (760, 761, L7)
R532	1-216-050-00	METAL GLAZE	1.1K	5%	1/10W (760, 761, L7)
R533	1-216-079-00	METAL CHIP	18K	5%	1/10W (760, 761, L7)
R534	1-216-067-00	METAL CHIP	5.6K	5%	1/10W (760, 761, L7)
R535	1-208-806-11	METAL GLAZE	10K	0.50%	1/10W (760, 761, L7)
R541	1-216-081-00	METAL CHIP	22K	5%	1/10W (760, 761, L7)
R551	1-216-129-00	METAL CHIP	2.2M	5%	1/10W (760, 761, L7)
R561	1-216-073-00	METAL CHIP	10K	5%	1/10W
R562	1-216-109-00	METAL CHIP	330K	5%	1/10W
R563	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R564	1-216-041-00	METAL CHIP	470	5%	1/10W
R565	1-216-099-00	METAL CHIP	120K	5%	1/10W
R566	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R567	1-216-295-00	METAL CHIP	0	5%	1/10W (760, 761, L7)
R571	1-216-073-00	METAL CHIP	10K	5%	1/10W (760, 761, L7)
R572	1-216-089-91	METAL GLAZE	47K	5%	1/10W (760, 761, L7)
R573	1-216-214-00	METAL GLAZE	4.7K	5%	1/8W (760, 761, L7)
R575	1-216-295-00	METAL CHIP	0	5%	1/10W (760, 761, L7)
R591	1-249-421-11	CARBON	2.2K	5%	1/4W (760, 761, L7)
R592	1-216-069-00	METAL CHIP	6.8K	5%	1/10W (760, 761, L7)
R601	1-216-022-00	METAL CHIP	75	5%	1/10W
R611	1-216-041-00	METAL CHIP	470	5%	1/10W
R612	1-216-041-00	METAL CHIP	470	5%	1/10W (760, 761, L7)
R681	1-216-037-00	METAL CHIP	330	5%	1/10W
R683	1-249-407-11	CARBON	150	5%	1/4W
R684	1-249-408-11	CARBON	180	5%	1/4W
R685	1-216-021-00	METAL CHIP	68	5%	1/10W
R702	1-216-041-00	METAL CHIP	470	5%	1/10W (760, 761, L7)
R703	1-249-404-00	CARBON	82	5%	1/4W
R704	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R705	1-216-057-00	METAL CHIP	2.2K	5%	1/10W (L5)
R706	1-216-073-00	METAL CHIP	10K	5%	1/10W (760, 761, L7)
R709	1-216-049-91	METAL GLAZE	1K	5%	1/10W (L5)
R711	1-216-073-00	METAL CHIP	10K	5%	1/10W (L5)
R712	1-216-025-91	METAL GLAZE	100	5%	1/10W (L5)
R713	1-216-041-00	METAL CHIP	470	5%	1/10W (760, 761, L7)
R714	1-216-041-00	METAL CHIP	470	5%	1/10W (760, 761, L7)
R715	1-216-025-91	METAL GLAZE	100	5%	1/10W (760, 761, L7)
R716	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (760, 761, L7)
R717	1-216-073-00	METAL CHIP	10K	5%	1/10W (760, 761, L7)
R719	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R720	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R721	1-216-037-00	METAL CHIP	330	5%	1/10W
R722	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R725	1-216-049-91	METAL GLAZE	1K	5%	1/10W (760, 761, L7)

Ref. No.	Part No.	Description	Remark
R726	1-216-049-91	METAL GLAZE 1K 5% 1/10W	(760,761,L7)
R733	1-216-081-00	METAL CHIP 22K 5% 1/10W	(760,761,L7)
R734	1-216-081-00	METAL CHIP 22K 5% 1/10W	(760,761,L7)
R736	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R737	1-216-295-00	METAL CHIP 0 5% 1/10W	(760,761,L7)
R738	1-216-025-91	METAL GLAZE 100 5% 1/10W	(L5)
R740	1-216-093-00	METAL CHIP 68K 5% 1/10W	(760,761,L7)
R746	1-216-073-00	METAL CHIP 10K 5% 1/10W	(760,761,L7)
R747	1-249-421-11	CARBON 2.2K 5% 1/4W F	(760,761,L7)
R851	1-216-129-00	METAL CHIP 2.2M 5% 1/10W	(L5)
R852	1-216-049-91	METAL GLAZE 1K 5% 1/10W	(L5)
R853	1-216-041-00	METAL CHIP 470 5% 1/10W	(L5)
R854	1-216-089-91	METAL GLAZE 47K 5% 1/10W	(L5)
R855	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	(L5)
R858	1-216-089-91	METAL GLAZE 47K 5% 1/10W	(L5)
R859	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	(L5)
R871	1-216-073-00	METAL CHIP 10K 5% 1/10W	(L5)
R872	1-216-089-91	METAL GLAZE 47K 5% 1/10W	(L5)
R873	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	(L5)
R874	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R881	1-216-081-00	METAL CHIP 22K 5% 1/10W	
⚠R882	1-249-389-11	CARBON 4.7 5% 1/4W F	
R885	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
R886	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R887	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
		< RF MODULATOR >	
⚠RF701	1-466-989-11	MODULATOR, RF	(760,761,L7)
		< VARIABLE RESISTOR >	
RV521	1-241-763-11	RES, ADJ, CERMET 4.7K	(760,761,L7)
RV531	1-241-763-11	RES, ADJ, CERMET 4.7K	(760,761,L7)
RV541	1-241-764-11	RES, ADJ, CERMET 10K	(760,761,L7)
		< SWITCH >	
S251	1-570-953-11	SWITCH, PUSH (1 KEY)(REC PRF)	
S701	1-571-588-11	SWITCH, SLIDE (RF UNIT CH3/CH4)	(L5)

Ref. No.	Part No.	Description	Remark
		< TRANSFORMER >	
T881	1-423-414-11	TRANSFORMER, BIAS OSCILLATION	
		< TUNER >	
⚠TU701	8-598-345-00	TUNER, BTF-WA407	(760,761,L7)
⚠TU702	1-693-318-11	TUNER, RF MOD/IF (BTF-2MA402)	(L5)
		< VIBRATOR >	
X201	1-760-494-11	VIBRATOR, CRYSTAL (16MHz)	
X202	1-579-463-11	VIBRATOR, CRYSTAL (32.768kHz)	
X401	1-577-381-11	VIBRATOR, CRYSTAL (14MHz)	

Ref. No.	Part No.	Description	Remark
*	A-6782-798-A	MF-283 BOARD, COMPLETE (790, 960HF/HFMX)	
*	A-6782-806-A	MF-289 BOARD, COMPLETE (960HFCS/HFPX)	
		********************	
			(Ref. No. 1,000 Series)
		< CAPACITOR >	
C201	1-163-035-00	CERAMIC CHIP 0.047uF	50V
		< CONNECTOR >	
CN201	1-695-368-31	CONNECTOR, FFC/FPC 7P	
		< LED >	
D201	8-719-056-07	LED SLR-342MC3F (POWER)	
D202	8-719-056-07	LED SLR-342MC3F (POWER)	
		< IC >	
IC201	1-466-833-11	IC RAY-CATCHER BLOCK, REMOCON	
		< TRANSISTOR >	
Q201	8-729-421-22	TRANSISTOR UN2211	
		< RESISTOR >	
R201	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R202	1-216-021-00	METAL CHIP 68 5% 1/10W	
		< SWITCH >	
S201	1-571-977-11	SWITCH, TACTIL (POWER)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
*	A-6782-794-A	MF-284 BOARD, COMPLETE (760,761,L5MX/PA, L7HFMX/HFPA)			
*	A-6782-795-A	MF-290 BOARD, COMPLETE (760HFPX,L5CS, L7HFCS)			
		**********************			
		(Ref.No. 2,000 Series)			
		< CONNECTOR >			
CN201	1-691-068-21	HOUSING, CONNECTOR 9P			
		< LED >			
D201	8-719-056-07	LED SLR-342MC3F (POWER)			
D202	8-719-056-07	LED SLR-342MC3F (POWER)			
		< RESISTOR >			
R202	1-216-021-00	METAL CHIP	68	5%	1/10W
		< SWITCH >			
S201	1-571-977-11	SWITCH, TACTIL (POWER)			
*	A-6782-812-A	PS-355 BOARD, COMPLETE (790HF,960HF/ HFMX)			
*	A-6782-830-A	PS-356 BOARD, COMPLETE (L5MX/PA)			
*	A-6782-789-A	PS-356 BOARD, COMPLETE (760,761, L7HFMX/HFPA)			
		*********************			
		(Ref.No. 1,000 Series)			
	1-533-223-11	HOLDER, FUSE			
*	3-951-893-01	HEAT SINK			
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3			
		< CAPACITOR >			
⚠C101	1-104-705-11	FILM	0.1uF	20%	250V
⚠C102	1-104-705-11	FILM	0.1uF	20%	250V
⚠C103	1-107-401-11	ELECT	150uF	20%	200V
⚠C104	1-113-900-11	ELECT	470PF	10%	250V
⚠C105	1-113-900-11	ELECT	470PF	10%	250V
⚠C107	1-113-919-11	ELECT	0.0015uF	99%	125V
C121	1-126-935-11	ELECT	470uF	20%	16V
C122	1-126-926-11	ELECT	1000uF	20%	10V
C125	1-128-551-11	ELECT	22uF	20%	25V
C131	1-128-499-11	ELECT	220uF	20%	16V
C132	1-128-551-11	ELECT	22uF	20%	25V
C133	1-104-664-11	ELECT	47uF	20%	25V
C141	1-126-967-11	ELECT	47uF	20%	16V
C142	1-126-933-11	ELECT	100uF	20%	16V
C161	1-126-967-11	ELECT	47uF	20%	16V
C162	1-126-924-11	ELECT	330uF	20%	10V
C171	1-126-924-11	ELECT	330uF	20%	10V
C181	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C182	1-126-967-11	ELECT	47uF	20%	16V
C183	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C184	1-126-967-11	ELECT	47uF	20%	50V
C185	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C186	1-126-967-11	ELECT	47uF	20%	50V
C187	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C188	1-126-967-11	ELECT	47uF	20%	50V
C189	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C190	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C191	1-124-248-00	ELECT	22uF	20%	35V
		< AC INLET >			
⚠CJ101	1-251-135-11	INLET, AC. (AC IN ~)			
		< CONNECTOR >			
CN101	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P			
		< POWER BLOCK >			
⚠CP101	1-468-086-11	POWER BLOCK			
⚠CP102	1-467-811-12	UNIT, DC-DC CONVERTER			
		< DIODE >			
⚠D101	8-719-510-06	DIODE S1WB60			
D161	8-719-911-19	DIODE 1SS119-25			
D162	8-719-109-85	DIODE RD5.1ES-B2			
		< FUSE >			
⚠F101	1-532-743-11	FUSE, GLASS CYLINDRICAL(DIA.5)(2A/125V)			
		< IC >			
⚠IC141	8-759-189-48	IC PQ12RE11			
		< COIL >			
⚠L121	1-403-588-11	CIL, CHOKE	22uH		
⚠L122	1-403-588-11	CIL, CHOKE	22uH		
L181	1-408-970-21	INDUCTOR	10uH		
L182	1-414-142-11	INDUCTOR	1uH		
L183	1-414-142-11	INDUCTOR	1uH		
L184	1-410-322-11	INDUCTOR	3.3UH(790,960HF/HFMX)		
		< LINE FILTER >			
⚠LF102	1-424-117-11	FILTER, LINE 18mH			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

< IC LINK >

Ref. No.	Part No.	Description	Remark
⚠PS121	1-532-637-00	LINK, IC ICP-N25 (1.0A)	
⚠PS122	1-532-637-00	LINK, IC ICP-N25 (1.0A)	
⚠PS123	1-532-637-00	LINK, IC ICP-N25 (1.0A)	
⚠PS181	1-532-605-00	LINK, IC ICP-N10 (0.4A)	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
⚠Q131	8-729-140-93	TRANSISTOR 2SB733-34	
Q132	8-729-421-22	TRANSISTOR UN2211	
⚠Q161	8-729-140-98	TRANSISTOR 2SD773-34	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
⚠R102	1-202-729-00	SOLID 6.8M 20% 1/2W	
⚠R102	1-202-729-00	SOLID 6.8M 20% 1/2W	
⚠R102	1-202-729-00	SOLID 6.8M 20% 1/2W	
R102	1-202-729-00	SOLID 6.8M 20% 1/2W	
R125	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R131	1-249-417-11	CARBON 1K 5% 1/4W	
R132	1-216-430-11	METAL OXIDE 390 5% 1W	
R133	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R141	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R161	1-249-412-11	CARBON 390 5% 1/4W	
R182	1-216-378-11	METAL OXIDE 5.6 5% 2W	
R183	1-216-480-11	METAL OXIDE 820 5% 3W	

Ref. No.	Part No.	Description	Remark
*	A-6782-804-A	PS-367 BOARD, COMPLETE (960HFCS/HFPX)	
*	A-6782-819-A	PS-368 BOARD, COMPLETE (760HFPX/HFCS)	
*	A-6782-820-A	PS-368 BOARD, COMPLETE (L5CS)	

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(Ref. No. 2,000 Series)

Ref. No.	Part No.	Description	Remark
	1-533-223-11	HOLDER, FUSE	
*	3-951-893-01	HEAT SINK	
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
⚠C101	1-104-705-11	FILM 0.1uF 20% 250V	
⚠C102	1-104-705-11	FILM 0.1uF 20% 250V	
⚠C103	1-107-414-11	ELECT 220uF 20% 400V	
⚠C104	1-113-935-11	ELECT 0.001uF 99% 125V	
⚠C105	1-113-935-11	ELECT 0.001uF 99% 125V	
⚠C106	1-113-935-11	ELECT 0.001uF 99% 125V	
⚠C107	1-113-935-11	ELECT 0.001uF 99% 125V	
⚠C108	1-113-935-11	ELECT 0.001uF 99% 125V	
⚠C112	1-113-895-11	CERAMIC 150PF 10% 250V	
C121	1-126-935-11	ELECT 470uF 20% 16V	
C122	1-126-926-11	ELECT 1000uF 20% 10V	
C125	1-128-551-11	ELECT 22uF 20% 25V	
C131	1-128-499-11	ELECT 220uF 20% 16V	
C132	1-128-551-11	ELECT 22uF 20% 25V	
C133	1-104-664-11	ELECT 47uF 20% 25V	
C141	1-126-967-11	ELECT 47uF 20% 16V	
C142	1-126-933-11	ELECT 100uF 20% 16V	
C161	1-126-967-11	ELECT 47uF 20% 16V	
C162	1-126-924-11	ELECT 330uF 20% 10V	
C171	1-126-924-11	ELECT 330uF 20% 10V	
C181	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C182	1-126-967-11	ELECT 47uF 20% 16V	
C183	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C184	1-126-967-11	ELECT 47uF 20% 50V	
C185	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C186	1-126-967-11	ELECT 47uF 20% 50V	
C187	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C188	1-126-967-11	ELECT 47uF 20% 50V	
C189	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C190	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C191	1-124-248-00	ELECT 22uF 20% 35V	

< AC INLET >

Ref. No.	Part No.	Description	Remark
⚠CJ101	1-251-134-11	INLET, AC (NONPOLAR) (AC IN ~)	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN101	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P	

< POWER BLOCK >

Ref. No.	Part No.	Description	Remark
⚠CP101	1-468-083-11	POWER BLOCK	
⚠CP101	1-468-083-11	POWER BLOCK	
CP102	1-467-811-12	UNIT, DC-DC CONVERTER	

< DIODE >

Ref. No.	Part No.	Description	Remark
⚠D101	8-719-510-06	DIODE S1WB60	
D161	8-719-911-19	DIODE 1SS119-25	
D162	8-719-109-85	DIODE RD5.1ES-B2	

< FUSE >

Ref. No.	Part No.	Description	Remark
⚠F101	1-532-203-00	FUSE (T2AL/250V)	

< IC >

Ref. No.	Part No.	Description	Remark
⚠IC141	8-759-189-48	IC PQ12RE11	

< COIL >

Ref. No.	Part No.	Description	Remark
⚠L121	1-403-588-11	CIL, CHOKE 22uH	
⚠L122	1-403-588-11	CIL, CHOKE 22uH	
L181	1-408-970-21	INDUCTOR 10uH	
L182	1-414-142-11	INDUCTOR 1uH	
L183	1-414-142-11	INDUCTOR 1uH	
L184	1-410-322-11	INDUCTOR 3.3UH (960HFCS/HFPX)	

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Ref. No.	Part No.	Description			Remark
		< LINE FILTER >			
⚠LF102	1-424-117-11	FILTER, LINE 18mH			
⚠LF103	1-424-117-11	FILTER, LINE 18mH			
		< IC LINK >			
⚠PS121	1-532-637-00	LINK, IC ICP-N25 (1.0A)			
⚠PS122	1-532-637-00	LINK, IC ICP-N25 (1.0A)			
⚠PS123	1-532-637-00	LINK, IC ICP-N25 (1.0A)			
⚠PS181	1-532-605-00	LINK, IC ICP-N10 (0.4A)			
		< TRANSISTOR >			
⚠Q131	8-729-140-93	TRANSISTOR	2SB733-34		
Q132	8-729-421-22	TRANSISTOR	UN2211		
⚠Q161	8-729-140-98	TRANSISTOR	2SD773-34		
		< RESISTOR >			
⚠R101	1-214-947-00	METAL	2.7M	1%	1/2W
R125	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R131	1-249-417-11	CARBON	1K	5%	1/4W
R132	1-216-430-11	METAL OXIDE	390	5%	1W
R133	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R141	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R161	1-249-412-11	CARBON	390	5%	1/4W
R182	1-216-378-11	METAL OXIDE	5.6	5%	2W
R183	1-216-480-11	METAL OXIDE	820	5%	3W

*	A-6782-799-A	RP-197 BOARD, COMPLETE (790)
*	A-6782-811-A	RP-197 BOARD, COMPLETE (960HF/HFMX)
*	A-6782-808-A	RP-202 BOARD, COMPLETE (960HFCS/HFPX)

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(Ref.No. 1,000 Series)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C501	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C502	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C503	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C504	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C505	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C506	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C507	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C508	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C509	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C510	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C511	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C512	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C513	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C514	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C515	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C516	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C517	1-163-033-91	CERAMIC CHIP	0.022uF		50V
C518	1-124-584-00	ELECT	100uF	20%	10V
C519	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C521	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C522	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C523	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V
C524	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C525	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C526	1-124-584-00	ELECT	100uF	20%	10V
C527	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C528	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C529	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C531	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C532	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C571	1-163-099-00	CERAMIC CHIP	18PF	5%	50V(960)
C572	1-163-099-00	CERAMIC CHIP	18PF	5%	50V(960)
C573	1-164-232-11	CERAMIC CHIP	0.01uF		50V(960)
C575	1-163-251-11	CERAMIC CHIP	100PF	5%	50V(960)
C576	1-163-121-00	CERAMIC CHIP	150PF	5%	50V(960)
C577	1-163-245-11	CERAMIC CHIP	56PF	5%	50V(960)
C578	1-163-038-91	CERAMIC CHIP	0.1uF		25V(960)
C579	1-124-589-11	ELECT	47uF	20%	16V(960)
C580	1-163-038-91	CERAMIC CHIP	0.1uF		25V(960)
C760	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C761	1-124-584-00	ELECT	100uF	20%	10V
C762	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C763	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C764	1-124-257-00	ELECT	2.2uF	20%	50V
C765	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C767	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C768	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C769	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C770	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C773	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C774	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C775	1-126-160-11	ELECT	1uF	20%	50V
C776	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C901	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C902	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V
C903	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C904	1-163-249-11	CERAMIC CHIP	82PF	5%	50V
C906	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C907	1-126-967-11	ELECT	47uF	20%	16V
C909	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C912	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
R519	1-163-031-11	CERAMIC CHIP	0.01MF		50V

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Ref. No.	Part No.	Description				Remark
		< CONNECTOR >				
CN501	1-766-986-11	CONNECTOR, FFC/FPC 13P				
* CN502	1-564-029-00	PIN, CONNECTOR 4P				
CN503	1-766-720-11	CONNECTOR, BOARD TO BOARD 17P				
CN701	1-766-724-11	CONNECTOR, BOARD TO BOAR 7P				
		< IC >				
IC501	8-759-352-17	IC	HA118195NT			
IC760	8-759-055-49	IC	AN3327K			
		< JUMPER RESISTOR >				
JR502	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR503	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR504	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR505	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR506	1-216-296-00	METAL CHIP	0	5%	1/10W	
JR507	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR508	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR509	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR901	1-216-296-00	METAL CHIP	0	5%	1/10W	
		< COIL >				
L501	1-414-189-31	INDUCTOR	100uH			
L502	1-414-189-31	INDUCTOR	100uH			
L503	1-410-525-11	INDUCTOR	220uH			
L571	1-410-509-11	INDUCTOR	10uH			(960)
L572	1-410-509-11	INDUCTOR	10uH			(960)
L573	1-410-507-11	INDUCTOR	6.8uH			(960)
L574	1-414-189-31	INDUCTOR	100uH			(960)
L760	1-414-189-31	INDUCTOR	100uH			
L901	1-414-189-31	INDUCTOR	100uH			
L903	1-410-516-11	INDUCTOR	39uH			
L904	1-410-512-11	INDUCTOR	18uH			
L906	1-410-518-41	INDUCTOR	56uH			
		< TRANSISTOR >				
Q501	8-729-271-21	TRANSISTOR	2SC2712Y			
Q502	8-729-216-21	TRANSISTOR	2SA1162Y			
Q571	8-729-216-22	TRANSISTOR	2SA1162-G			(960)
Q572	8-729-216-22	TRANSISTOR	2SA1162-G			(960)
Q573	8-729-421-19	TRANSISTOR	UN2213			(960)
Q574	8-729-421-19	TRANSISTOR	UN2213			(960)
Q575	8-729-804-41	TRANSISTOR	2SB1122-S			(960)
Q901	8-729-271-21	TRANSISTOR	2SC2712Y			
Q904	8-729-216-21	TRANSISTOR	2SA1162Y			
Q905	8-729-271-21	TRANSISTOR	2SC2712Y			

Ref. No.	Part No.	Description				Remark
		< RESISTOR >				
C520	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
C911	1-216-295-00	METAL CHIP	0	5%	1/10W	
R501	1-216-044-00	METAL CHIP	620	5%	1/10W	
R502	1-216-044-00	METAL CHIP	620	5%	1/10W	
R503	1-216-295-00	METAL CHIP	0	5%	1/10W	
R504	1-216-295-00	METAL CHIP	0	5%	1/10W	
R505	1-216-295-00	METAL CHIP	0	5%	1/10W	
R506	1-216-295-00	METAL CHIP	0	5%	1/10W	
R507	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R508	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R509	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R510	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R511	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R512	1-216-224-91	METAL GLAZE	12K	5%	1/8W	
R513	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R514	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R515	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R516	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R517	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R518	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R520	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R571	1-216-013-00	METAL CHIP	33	5%	1/10W	(960)
R572	1-216-041-00	METAL CHIP	470	5%	1/10W	(960)
R573	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	(960)
R574	1-216-095-00	METAL CHIP	82K	5%	1/10W	(960)
R575	1-216-089-91	METAL GLAZE	47K	5%	1/10W	(960)
R576	1-216-689-11	METAL CHIP	39K	0.5%	1/10W	(960)
R577	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	(960)
R578	1-216-073-00	METAL CHIP	10K	5%	1/10W	(960)
R762	1-216-035-00	METAL CHIP	270	5%	1/10W	
R763	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R765	1-216-033-00	METAL CHIP	220	5%	1/10W	
R766	1-249-418-11	CARBON	1.2K	5%	1/4W	
R767	1-216-035-00	METAL CHIP	270	5%	1/10W	
R768	1-216-097-91	METAL GLAZE	100K	5%	1/10W	
R771	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R776	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R901	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R902	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R903	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R904	1-216-037-00	METAL CHIP	330	5%	1/10W	
R905	1-216-295-00	METAL CHIP	0	5%	1/10W	
R906	1-216-043-91	METAL GLAZE	560	5%	1/10W	
R908	1-216-039-00	METAL CHIP	390	5%	1/10W	
R912	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R913	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R914	1-216-037-00	METAL CHIP	330	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R916	1-216-037-00	METAL CHIP	330	5%	1/10W	
R917	1-216-047-91	METAL GLAZE	820	5%	1/10W	
R918	1-216-049-91	METAL GLAZE	1K	5%	1/10W	
R919	1-216-295-00	METAL CHIP	0	5%	1/10W	
R920	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R921	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R931	1-216-295-00	METAL CHIP	0	5%	1/10W	
R932	1-216-295-00	METAL CHIP	0	5%	1/10W	

* A-6782-832-A RP-198 BOARD, COMPLETE (L5MX/PA)
* A-6782-791-A RP-198 BOARD, COMPLETE (760, 761, L7HFMX/HFPA)
* A-6782-796-A RP-203 BOARD, COMPLETE (760HFPX, L7HFCS)
* A-6782-821-A RP-203 BOARD, COMPLETE (L5CS)

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(Ref. No. 2,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description				Remark
C501	1-163-229-11	CERAMIC CHIP	12PF	5%	50V	
C502	1-163-229-11	CERAMIC CHIP	12PF	5%	50V	
C503	1-163-033-91	CERAMIC CHIP	0.022uF		50V	
C504	1-163-033-91	CERAMIC CHIP	0.022uF		50V	
C505	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C506	1-163-033-91	CERAMIC CHIP	0.022uF		50V	
C507	1-163-241-11	CERAMIC CHIP	39PF	5%	50V	
C508	1-163-241-11	CERAMIC CHIP	39PF	5%	50V	
C509	1-163-033-91	CERAMIC CHIP	0.022uF		50V	
C510	1-163-033-91	CERAMIC CHIP	0.022uF		50V	
C511	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V	
C512	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V	
C513	1-163-033-91	CERAMIC CHIP	0.022uF		50V	
C514	1-163-033-91	CERAMIC CHIP	0.022uF		50V	
C515	1-163-033-91	CERAMIC CHIP	0.022uF		50V	
C516	1-163-033-91	CERAMIC CHIP	0.022uF		50V	
C517	1-163-033-91	CERAMIC CHIP	0.022uF		50V	
C518	1-124-584-00	ELECT	100uF	20%	10V	
C519	1-163-038-91	CERAMIC CHIP	0.1uF		25V	
C521	1-163-038-91	CERAMIC CHIP	0.1uF		25V	
C522	1-163-038-91	CERAMIC CHIP	0.1uF		25V	
C523	1-163-059-00	CERAMIC CHIP	0.01uF	10%	50V	
C524	1-163-239-11	CERAMIC CHIP	33PF	5%	50V	
C525	1-163-239-11	CERAMIC CHIP	33PF	5%	50V	
C526	1-124-584-00	ELECT	100uF	20%	10V	
C527	1-163-038-91	CERAMIC CHIP	0.1uF		25V	
C528	1-163-127-00	CERAMIC CHIP	270PF	5%	50V	
C529	1-163-038-91	CERAMIC CHIP	0.1uF		25V	
C531	1-163-038-91	CERAMIC CHIP	0.1uF		25V	
C532	1-163-038-91	CERAMIC CHIP	0.1uF		25V	
C760	1-163-031-11	CERAMIC CHIP	0.01uF		50V	(760, 761, L7)
C761	1-124-584-00	ELECT	100uF	20%	10V	(760, 761, L7)
C762	1-163-031-11	CERAMIC CHIP	0.01uF		50V	(760, 761, L7)
C763	1-163-038-91	CERAMIC CHIP	0.1uF		25V	(760, 761, L7)
C764	1-124-257-00	ELECT	2.2uF	20%	50V	(760, 761, L7)
C765	1-163-031-11	CERAMIC CHIP	0.01uF		50V	(760, 761, L7)
C767	1-163-031-11	CERAMIC CHIP	0.01uF		50V	(760, 761, L7)
C768	1-163-135-00	CERAMIC CHIP	560PF	5%	50V	(760, 761, L7)
C769	1-163-135-00	CERAMIC CHIP	560PF	5%	50V	(760, 761, L7)
C770	1-163-038-91	CERAMIC CHIP	0.1uF		25V	(760, 761, L7)
C773	1-163-031-11	CERAMIC CHIP	0.01uF		50V	(760, 761, L7)
C774	1-163-031-11	CERAMIC CHIP	0.01uF		50V	(760, 761, L7)
C775	1-126-160-11	ELECT	1uF	20%	50V	(760, 761, L7)
C776	1-163-031-11	CERAMIC CHIP	0.01uF		50V	(760, 761, L7)
C901	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C902	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V	
C903	1-163-243-11	CERAMIC CHIP	47PF	5%	50V	
C904	1-163-249-11	CERAMIC CHIP	82PF	5%	50V	
C906	1-163-038-91	CERAMIC CHIP	0.1uF		25V	
C907	1-126-967-11	ELECT	47uF	20%	16V	
C909	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C912	1-163-241-11	CERAMIC CHIP	39PF	5%	50V	
R519	1-163-031-11	CERAMIC CHIP	0.01MF		50V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN501	1-563-585-11	CONNECTOR, FLEXIBLE 8P	(L5)
CN501	1-766-986-11	CONNECTOR, FFC/FPC 13P	(760, 761, L7)
* CN502	1-564-029-00	PIN, CONNECTOR 4P	
CN503	1-766-720-11	CONNECTOR, BOARD TO BOARD 17P	
CN701	1-766-724-11	CONNECTOR, BOARD TO BOAR 7P	

< IC >

Ref. No.	Part No.	Description		Remark
IC501	8-759-352-17	IC	HA118195NT	
IC760	8-759-055-49	IC	AN3327K	(760, 761, L7)

Ref. No.	Part No.	Description			Remark
		< JUMPER RESISTOR >			
JR502	1-216-295-00	METAL CHIP	0	5%	1/10W
JR503	1-216-295-00	METAL CHIP	0	5%	1/10W
JR504	1-216-295-00	METAL CHIP	0	5%	1/10W
JR505	1-216-295-00	METAL CHIP	0	5%	1/10W
JR506	1-216-296-00	METAL CHIP	0	5%	1/8W
JR507	1-216-295-00	METAL CHIP	0	5%	1/10W
JR508	1-216-295-00	METAL CHIP	0	5%	1/10W
JR509	1-216-295-00	METAL CHIP	0	5%	1/10W
JR901	1-216-296-00	METAL CHIP	0	5%	1/8W
		< COIL >			
L501	1-414-189-31	INDUCTOR	100uH		
L502	1-414-189-31	INDUCTOR	100uH		
L503	1-410-525-11	INDUCTOR	220uH		
L760	1-414-189-31	INDUCTOR	100uH		(760, 761, L7)
L901	1-414-189-31	INDUCTOR	100uH		
L903	1-410-516-11	INDUCTOR	39uH		
L904	1-410-512-11	INDUCTOR	18uH		
L906	1-410-518-41	INDUCTOR	56uH		
		< TRANSISTOR >			
Q501	8-729-271-21	TRANSISTOR	2SC2712Y		
Q502	8-729-216-21	TRANSISTOR	2SA1162Y		
Q901	8-729-271-21	TRANSISTOR	2SC2712Y		
Q904	8-729-216-21	TRANSISTOR	2SA1162Y		
Q905	8-729-271-21	TRANSISTOR	2SC2712Y		
		< RESISTOR >			
C520	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
C911	1-216-295-00	METAL CHIP	0	5%	1/10W
R501	1-216-044-00	METAL CHIP	620	5%	1/10W
R502	1-216-044-00	METAL CHIP	620	5%	1/10W
R503	1-216-295-00	METAL CHIP	0	5%	1/10W
R504	1-216-295-00	METAL CHIP	0	5%	1/10W
R505	1-216-295-00	METAL CHIP	0	5%	1/10W
R506	1-216-295-00	METAL CHIP	0	5%	1/10W
R507	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R508	1-216-073-00	METAL CHIP	10K	5%	1/10W
R509	1-216-075-00	METAL CHIP	12K	5%	1/10W
R510	1-216-081-00	METAL CHIP	22K	5%	1/10W
R511	1-216-081-00	METAL CHIP	22K	5%	1/10W
R512	1-216-224-91	METAL GLAZE	12K	5%	1/8W
R513	1-216-081-00	METAL CHIP	22K	5%	1/10W
R514	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R515	1-216-081-00	METAL CHIP	22K	5%	1/10W
R516	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R517	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R518	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R520	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R762	1-216-035-00	METAL CHIP	270	5%	1/10W (760, 761, L7)
R763	1-216-067-00	METAL CHIP	5.6K	5%	1/10W (760, 761, L7)
R765	1-216-033-00	METAL CHIP	220	5%	1/10W (760, 761, L7)
R766	1-249-418-11	CARBON	1.2K	5%	1/4W F (760, 761, L7)
R767	1-216-035-00	METAL CHIP	270	5%	1/10W (760, 761, L7)
R768	1-216-097-91	METAL GLAZE	100K	5%	1/10W (760, 761, L7)
R771	1-216-079-00	METAL CHIP	18K	5%	1/10W (760, 761, L7)
R776	1-216-073-00	METAL CHIP	10K	5%	1/10W (760, 761, L7)
R901	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R902	1-216-077-00	METAL CHIP	15K	5%	1/10W
R903	1-216-075-00	METAL CHIP	12K	5%	1/10W
R904	1-216-037-00	METAL CHIP	330	5%	1/10W
R905	1-216-295-00	METAL CHIP	0	5%	1/10W
R906	1-216-043-91	METAL GLAZE	560	5%	1/10W
R908	1-216-039-00	METAL CHIP	390	5%	1/10W
R912	1-216-075-00	METAL CHIP	12K	5%	1/10W
R913	1-216-077-00	METAL CHIP	15K	5%	1/10W
R914	1-216-037-00	METAL CHIP	330	5%	1/10W
R916	1-216-037-00	METAL CHIP	330	5%	1/10W
R917	1-216-047-91	METAL GLAZE	820	5%	1/10W
R918	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R919	1-216-295-00	METAL CHIP	0	5%	1/10W
R920	1-216-075-00	METAL CHIP	12K	5%	1/10W
R921	1-216-077-00	METAL CHIP	15K	5%	1/10W
R931	1-216-295-00	METAL CHIP	0	5%	1/10W
R932	1-216-295-00	METAL CHIP	0	5%	1/10W
R933	1-216-295-00	METAL CHIP	0	5%	1/10W

MISCELLANEOUS

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Ref. No.	Part No.	Description
13	1-776-226-11	CABLE, FLAT (FHM-1) 9P
55	1-473-518-11	SWITCH BLOCK, CONTROL (790)
55	1-473-518-21	SWITCH BLOCK, CONTROL (960)
72	1-776-227-11	CABLE, FLAT (FMM-13) 7P
103	1-776-228-11	CABLE, FLAT (FDL-1) 10P (790, 960)
107	1-776-225-11	CABLE, FLAT (FMH-9) 15P
152	1-500-144-11	HEAD, FE
162	A-6739-103-A	ACE BLOCK ASSY

Ref. No.	Part No.	Description	Remark
164	1-506-485-11	PIN, CONNECTOR 6P	
220	8-848-576-02	DRUM ASSY, ROTARY UPPER (DZR-45-R) (760, 761, 790, L7)	
220	8-848-594-02	DRUM ASSY, ROTARY UPPER (DZR-51-R) (960)	
221	8-848-658-11	DRUM ASSY, LOWER (DZL-45B/J-RP) (760, 761, 790, L7)	
221	8-848-666-11	DRUM ASSY, LOWER (DZL-51B/J-RP) (960)	
223	8-848-681-11	DRUM ASSY, (DZH-73B/Q-RP) (L5)	
M902	1-698-409-11	MOTOR, DC SCV-0801A/Z-NP (CAPSTAN)	
M903	X-3943-883-1	MOTOR ASSY, CAM	
S410	1-572-662-11	SWITCH, ROTARY (DUAL MODE SHUTTLE)	

ACCESSORIES & PACKING MATERIALS
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Ref. No.	Part No.	Description	Remark
	1-473-483-11	REMOTE COMMANDER (RMT-V158C) (960)	
	1-473-483-21	REMOTE COMMANDER (RMT-V161A) (790)	
	1-473-487-11	REMOTE COMMANDER (RMT-V186) (L7)	
	1-473-487-21	REMOTE COMMANDER (RMT-V186A) (L5)	
	1-473-515-11	REMOTE COMMANDER (RMT-V184A) (760, 761)	
⚠	1-569-008-11	ADAPTER, CONVERSION 2P (760HFPX, 960HFCS/HFPX, L5CS, L7HFCS)	
⚠	1-575-131-11	CORD, POWER SUPPLY (760HFPX, 960HFCS/HFPX, L5CS, L7HFCS)	
	1-575-334-11	CORD, CONNECTION (AUDIO, VIDEO) (760, 761, L7)	
	1-696-592-11	CORD, CONNECTION (NTSC) (ANT)	
⚠	1-751-676-11	CORD, POWER (EXCEPT 760HFPX, 960HFCS/HFPX, L5CS, L7HFCS)	
	1-769-181-21	MOUSE, INTERIJENT CABLE (790, 960)	
	1-776-258-11	CORD, AVC CONNECTION (790, 960)	
	3-708-817-01	COVER, BATTERY (V-158C, V161A, V184A, V186, V186A)	
	3-800-533-11	MANUAL, INSTRUCTION (ENGLISH) (960HFPX)	
	3-800-552-11	MANUAL, INSTRUCTION (ENGLISH) (760HF/HFPX, 761)	
	3-800-552-21	MANUAL, INSTRUCTION (FRENCH) (760HF)	
	3-800-553-11	MANUAL, INSTRUCTION (ENGLISH) (960HF)	
	3-800-553-21	MANUAL, INSTRUCTION (FRENCH) (960HF)	
	3-800-553-31	MANUAL, INSTRUCTION (SPANISH) (960HFCS/HFMX)	
	3-810-205-11	MANUAL, INSTRUCTION (SPANISH) (L7)	
	3-810-206-11	MANUAL, INSTRUCTION (SPANISH) (L5)	
	3-810-321-11	MANUAL, INSTRUCTION (ENGLISH) (790)	
	3-810-321-21	MANUAL, INSTRUCTION (FRENCH) (790)	
	3-957-513-11	RING, SHUTTLE (V-158C, V161A, V184A, V186, V186A)	
*	3-966-238-01	INDIVIDUAL CARTON (760)	
*	3-966-238-21	INDIVIDUAL CARTON (761)	
*	3-966-258-01	INDIVIDUAL CARTON (790)	
*	3-966-258-11	INDIVIDUAL CARTON (960HF/HFPX)	
*	3-967-323-01	CUSHION (790, 960)	
*	3-967-324-01	CUSHION (EXCEPT 790, 960)	
*	3-967-421-01	INDIVIDUAL CARTON (960HFCS/HFMX)	
*	3-967-422-01	INDIVIDUAL CARTON (L7)	
*	3-967-422-11	INDIVIDUAL CARTON (L5)	
	X-3944-446-2	BUTTON ASSY (C) (V-158C, V161A, V184A, V186, V186A)	

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HARDWARE LIST
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Ref. No.	Part No.	Description	Remark
#1	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3	
#2	7-685-646-79	SCREW (3X8)	
#3	7-682-547-04	SCREW +P 3X6	
#4	7-624-190-61	STOP RING 2.4, TYPE-CS	
#5	7-624-106-04	STOP RING 3.0, TYPE-E	
#6	7-682-645-01	SCREW +PS 3X4	
#7	7-621-772-08	SCREW +B 2X3	
#8	7-628-254-10	SCREW +PS 2.6X6	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

6-12. SYSTEM CONTROL – SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE (MA-252 BOARD IC201)

Signal	Pin No.	I/O	I/O level
$\overline{\text{ASURA RESET}}$	MA-252 IC201㊵	I	Normally "H", "L" when service interruption is detected or restored.
$\overline{\text{ASURA CS}}$	MA-252 IC201㊹	I	Chip select signal from timer microprocessor. V period "L" pulse.
S IN 0	MA-252 IC201㊺	I	Serial communication data from timer microprocessor. V period "L" pulse.
S OUT 0	MA-252 IC201㊻	O	Serial communication data to timer microprocessor. V period "L" pulse.
$\overline{\text{S CLK}}$	MA-252 IC201㊼	I	Serial communication clock with timer microprocessor. V period "L" pulse.

6-13. SYSTEM CONTROL – Hi-Fi AUDIO BLOCK INTERFACE (MA-252 BOARD IC201)

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE LOADING	TAPE UNLOADING	PB	PB • PAUSE	SLOW	×2	CUE	REVIEW	REC	REC • PAUSE
AF ENV	MA-252 IC201(59)	I	AF RF envelope signal input terminal for automatic tracking.										
A MUTE	MA-252 IC201(92)	O (O.D)	L	L	L	*1	H	H	H	H	H	L	L
NA REC $\overline{\text{P}}$	MA-252 IC201⑪	O	L	L	L	L	L	L	L	L	L	H	L
AF REC $\overline{\text{P}}$	MA-252 IC201④	O	L	L	L	L	L	L	L	L	L	H	L
AF SWP	MA-252 IC201⑲	O	*1	L	L	*1	*1	*1	*1	*1	*1	*1	*1
FULL ERS	MA-252 IC201㊱	O (O.D)	H	H	H	H	H	H	H	H	H	L	H

*1. 30 Hz 50% duty pulse approx. 5 msec delayed from RF SW P.

6-14. SYSTEM CONTROL – NORMAL AUDIO BLOCK INTERFACE (MA-252 BOARD IC201)

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE LOADING	TAPE UNLOADING	PB	PB • PAUSE	SLOW	×2	CUE	REVIEW	REC	REC • PAUSE
AF ENV	MA-252 IC201(59)	I	AF RF envelope signal input terminal for automatic tracking.										
NA PB	MA-252 IC201(95)	O	L	L	L	H	H	H	H	H	H	L	L
A MUTE	MA-252 IC201⑰	O (O.D)	L	L	L	*1	H	H	H	H	H	L	L
$\overline{\text{NA SP}}$ POWER CONT2	MA-252 IC201(94)	O	*2	*2	*2	*3	*3	*3	*3	*3	*2	*2	*2
NA REC $\overline{\text{P}}$	MA-252 IC201⑪	O	L	L	L	L	L	L	L	L	L	H	L
AF REC $\overline{\text{P}}$	MA-252 IC201④	O	L	L	L	L	L	L	L	L	L	H	L
AF SWP	MA-252 IC201⑱	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
FULL ERS	MA-252 IC201㊱	O (O.D)	H	H	H	H	H	H	H	H	H	L	H

*1. 30 Hz 50% duty pulse approx. 5 msec delayed from RF SW P.
*2. Selected by REC mode selector. SP mode: "L".
*3. Selected by tape recording mode. SP mode: "L".

6-15. SYSTEM CONTROL AND RF MODULATOR – INPUT SELECTION BLOCK INTERFACE

Signal	Pin No.	I/O	I/O level
LINE 1	MA-252 IC201⑤	O	*1. Input select control signal.
LINE 2	MA-252 IC201(83)	O	

*1.

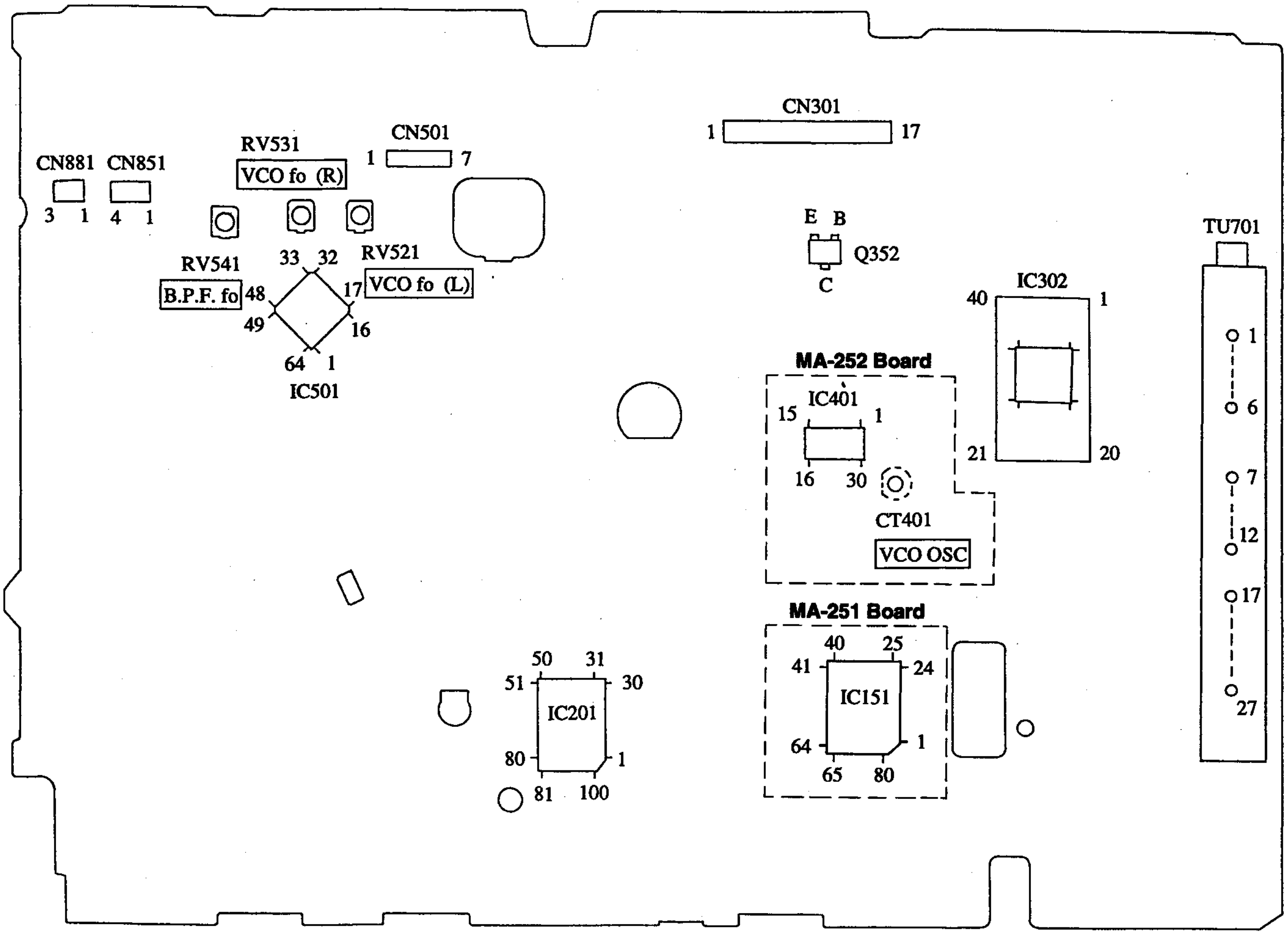
Input / Signal	Tuner	LINE 1	LINE 2
LINE 1 ⑤	L	H	L
LINE 2 (83)	L	L	H

6-16. SERVO/SYSTEM CONTROL MICROPROCESSOR PIN FUNCTION
(MA-252 BOARD IC201 CXP87360-040Q: SLV-L5, L7/CXP87360-039Q: SLV-760,761)

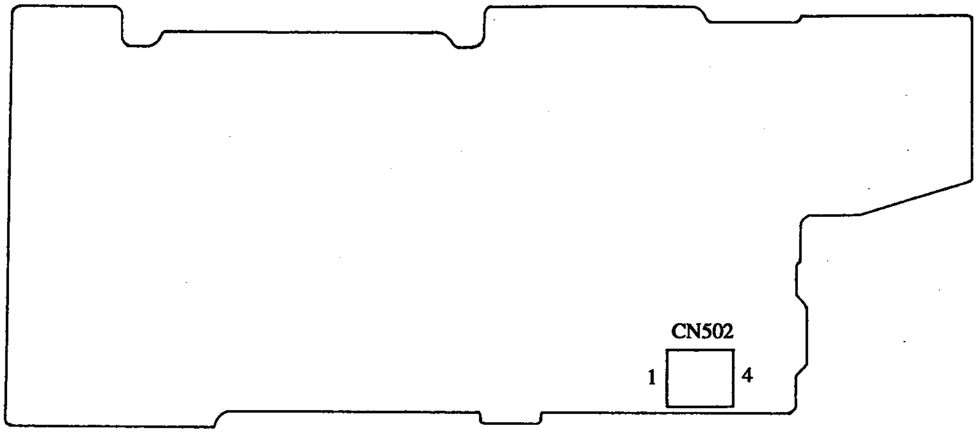
Pin No.	Pin name	I/O	Function
1	RF SWP	O	RF switching pulse output
2	QVD	O	Quasi VD pulse output
3	QHD ENABLE	O	Quasi HD voltage level control
4	AF REC P	O	"H" output when hi-fi audio REC
5	LINE 1	O	Input selection control signal
6	MAIN/SAP	O	MAIN/SAP judge signal output
7	REC CTL	O	REC CTL signal output
8	CAP TRQ3	O	Capstan current control
9	APC2	I	APC control input terminal 2
10	APC1	I	APC control input terminal 1
11	NA REC P	I/O	Normal audio recording mode H: recording mode
12	SP/EP/LP	O	"L" when SP mode "H" when EP/LP mode
13	CAM LOAD	I	Loading motor rotating direction control
14	CAM UNLOAD	I	Loading motor rotating direction control
15	C IN (REC PRF)	I	Erasing protection bab, cassette IN detection input
16	RENTAL	I/O	YNR control
17	A MUTE	O	"H" when audio mute
18	NC	–	Not used
19	STEREO	I	Tuner audio mode input (stereo)
20	F MONO	O	Tuner audio select signal
21	TV/VTR	O	"H" when TV mode "L" when VTR mode
22	EDS CS	O	EDS chip select signal
23	SYS CHECK	O	System check control signal
24	TU CLOCK	O	Tuner PLL clock
25	TU DATA	O	Tuner PLL data
26	TU ENABLE	O	Tuner chip select
27	MODE 4	I	Mechanism section CAM encoder input
28	MODE 3	I	Mechanism section CAM encoder input
29	MODE 2	I	Mechanism section CAM encoder input
30	MODE 1	I	Mechanism section CAM encoder input
31	CAM 12V	O	CAM motor reference voltage
32	T/E LED	O	T/E LED output
33	CAP TRQ2	O	Capstan current control signal 2 L: FF/REW to STOP
34	CAP TRQ1	O	Capstan current control signal 1 L: SLOW speed down
35	CAP STOP	O	Capstan STOP signal output
36	FULL ERS	O	Full erase control
37	EEP RESET	O	EEP ROM reset output
38	EEP CS	O	EEP ROM select
39	MP	I	Fixed to L
40	ASURA RESET	I	System reset input
41	VSS	–	GND
42	XTAL	–	System clock 16 MHz
43	EXTAL	–	System clock 16 MHz
44	ASURA CS	I	S/S microcomputer chip select signal
45	S IN 0	I	Serial communication signal
46	S OUT 0	O	Serial communication signal
47	SCLK	O	Serial communication signal
48	OSD CS	O	OSD chip select signal
49	SYS RESET	O	System reset output
50	FLD CS	O	FLD chip select signal
51	POWER CONT1	O	Power control signal 1
52	AVSS	–	UNSW GND
53	AVREF	–	AD port reference input UNSW 5V
54	AVDD	–	UNSW 5V
55	APC ERROR	I	APC error input
56	ATF	I	ATF signal input
57	DEST2 DEW	I	DEW sensor input Not used
58	VA ADJ	I	ADJ mode 0V: SWP Adj 2.5V: HiFi Adj
59	AF ENV	I	Hi-Fi audio playback signal envelope
60	RF ENV	I	Video playback signal envelope
61	T SENS	I	Take up end sensor input
62	S SENS	I	Supply end sensor input
63	S REEL FG	I	S side reel FG input
64	T REEL FG	I	T side reel FG input
65	H DET	I	H sync separation input
66	V SYNC	I	Composite sync input
67	PB CTL	I	Playback CTL input
68	DRM PG	I	Drum PG input
69	DRM FG	I	Drum FG input
70	CAP FG	I	Capstan FG input
71	AUTOPRESET	O	Autopreset on display
72	CAP RVS	O	Capstan reverse control H when Reverse
73	CAP DA	O	Capstan error D/A output
74	DRUM DA	O	Drum PG input
75	CTL RED	O	"H" CTL write
76	CTL STEP	O	CTL amp, STEP operation control
77	EEP BUSY	I	EEP ROM busy signal input
78	EDS DAV	O	Not used
79	CTL INDEX	O	CTL INDEX signal input
80	SO1	I/O	Signal for serial communication
81	SCLK1	I/O	Signal for serial communication
82	POWER FAIL	I	Power voltage drop detection terminal
83	LINE 2 CONT	O	Input selection control signal
84	APC PWM	O	PWM output for APC
85	RMC	I	Remote control signal input
86	TEX	–	Liquid crystal oscillation terminal (32kHz)
87	TX	–	Liquid crystal oscillation terminal (32kHz)
88	VSS	–	GND
89	VDD	–	5V
90	NC		Not used
91	ORC SETTEI	O	H when ORC measurement
92	NC	O	Not used
93	SP	O	Tape speed Select
94	POWER CONT 2	O	Power control signal 2
95	NA PB	O	Audio output control signal H when normal audio playback
96	AF REC	O	"H" output when hi-fi audio REC
97	JOG	O	"H" when trick play mode
98	V PB	O	Video system playback mode "L" when playback
99	STEP PLS	O	Step pulse H when Capstan step driving
100	AF SWP	O	AF switching pulse output

2-7. PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENTS

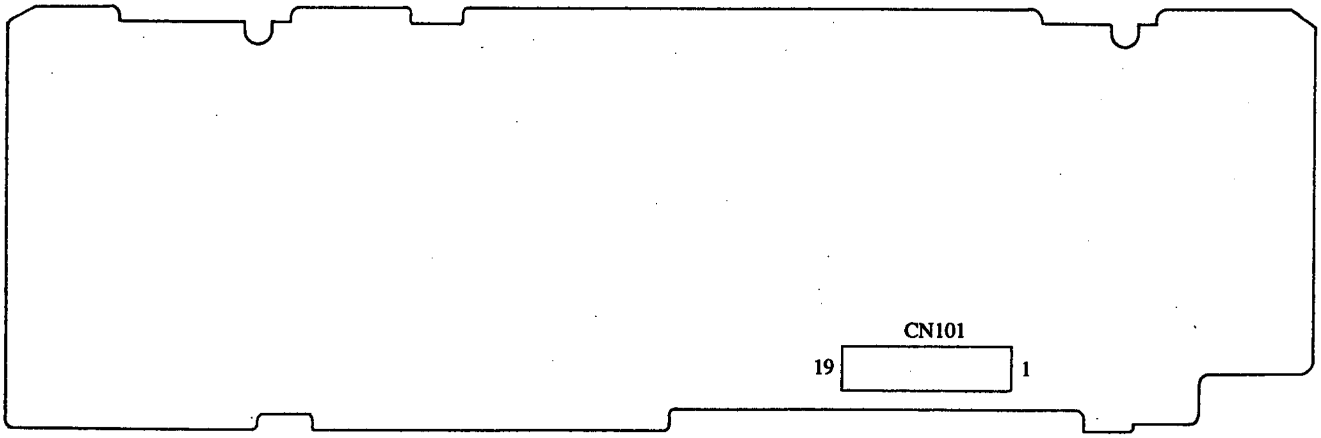
MA-251/252 BOARD (CONDUCTOR SIDE)


CN301
1
17
CN501
1
7
RV531
VCO fo (R)
CN881
CN851
3
1
4
1
E
B
Q352
C
TU701
RV541
B.P.F. fo
33
32
RV521
VCO fo (L)
48
17
49
16
64
1
IC501
IC302
40
1
MA-252 Board
IC401
15
1
21
20
16
30
CT401
VCO OSC
1
6
7
12
17
27
MA-251 Board
40
25
41
24
IC151
64
1
65
80
50
31
51
30
IC201
80
1
81
100

RP-197/198/202/203 BOARD (COMPONENT SIDE)



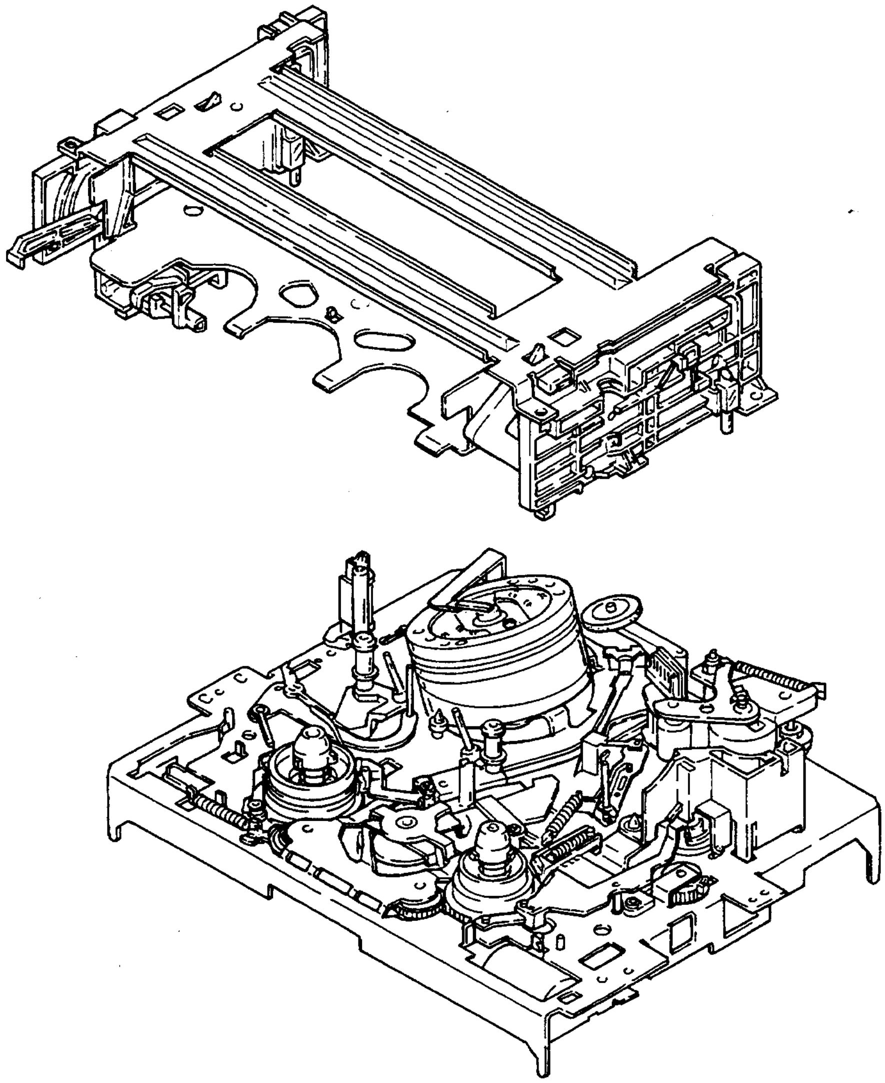
PS-355/356/367/368 BOARD (COMPONENT SIDE)



VHS MECHANICAL ADJUSTMENT MANUAL IV

H MECHANISM

Please use with the service manual.



VHS VIDEO CASSETTE RECORDER

MICROFILM

SONY®

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1. PREPARATION FOR MECHANISM CHECK ADJUSTMENT AND REPLACEMENT

Refer to the service manual, "DISASSEMBLY" for removal of the cabinet and boards.

1-1. LOADING AND THREADING PROCEDURE WHEN THE POWER TURNS OFF (Fig. 1-1)

1-1-1. LOADING AND THREADING PROCEDURE WITH HANDS

1) Turn cam motor in the arrow Ⓐ direction until loading and threading are end.

1-1-2. LOADING AND THREADING PROCEDURE WITH REGULATED DC POWER SUPPLY

1) Applying approx. +9 V (300 mA) to cam motor with regulated DC power supply makes it loading and threading.

Note: When loading and threading without cassette, claws are caught in four positions as following figure (in the order ① → ② → ③ → ④).
So release them with hands.

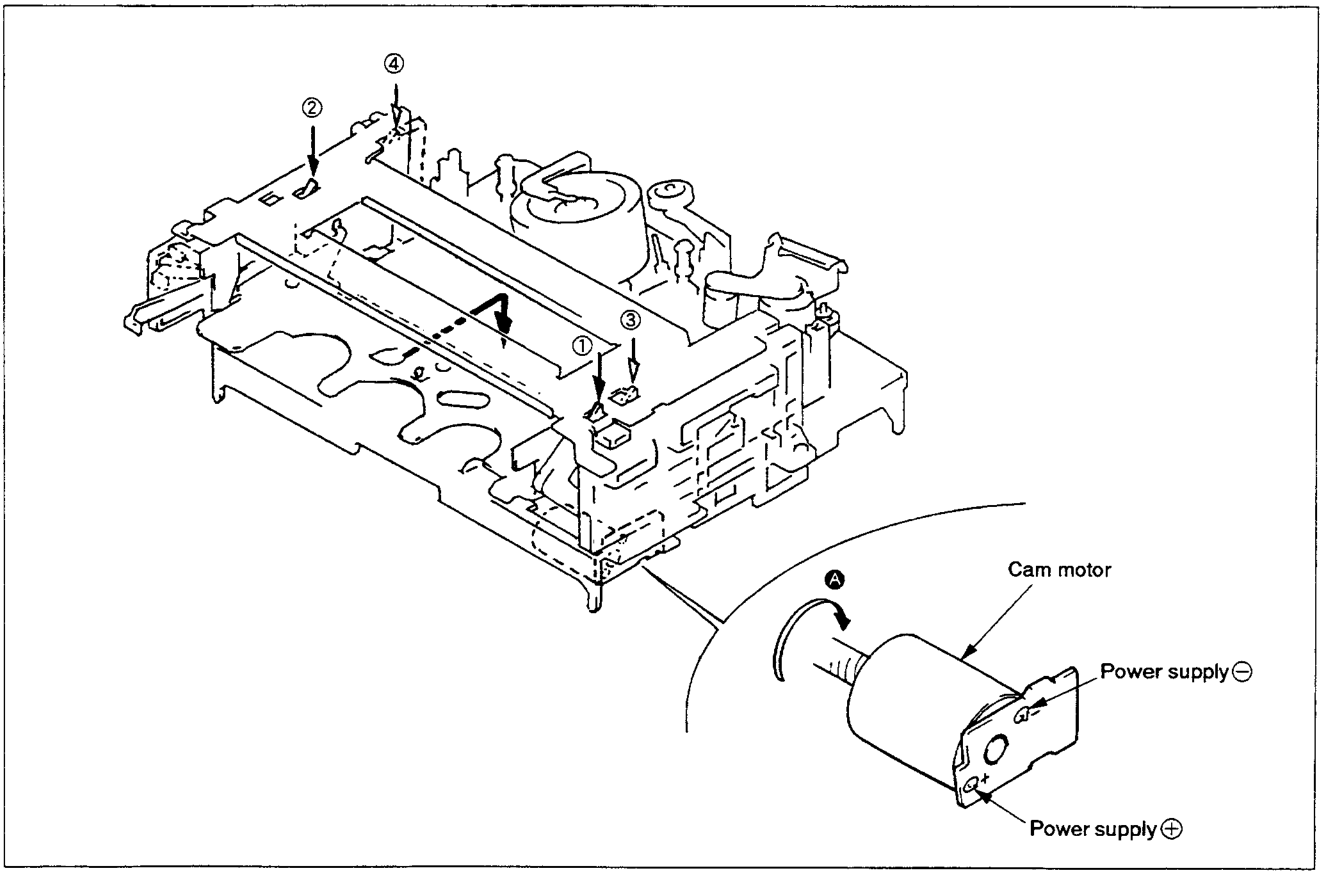


Fig. 1-1

1-2. UNLOADING AND UNTHREADING PROCEDURE WHEN THE POWER TURNS OFF (Figs. 1-2 and 1-3)

1-2-1. UNLOADING AND UNTHREADING PROCEDURE WITH HANDS

1) Turn cam motor in the arrow Ⓑ direction until unthreading is end.
2) Turn capstan motor in the arrow Ⓒ direction to take up tape in cassette.
3) Turn cam motor in the arrow Ⓑ direction until unloading is end.

1-2-2. UNLOADING AND UNTHREADING PROCEDURE WITH REGULATED DC POWER SUPPLY

1) Apply approx. +9 V (300 mA) to contrary polarities of cam motor.
2) Unthreading operation begins, tape guides return to their original positions (Unthreading operation is end but tape remains), then stop cam motor by turning power off.

Note: When unloading begins and cassette lid is closed, turn cam motor in the arrow Ⓐ direction to open tape guard.

3) Turn capstan motor in the arrow Ⓒ direction to take up tape in cassette.

Note: That tape is not caught at pinch roller. (Fig. 1-3)

4) Check that tape is not loosened completely, and apply approx. +9 V (300 mA) to contrary polarities of cam motor with regulated DC power supply. (Fig. 1-2)

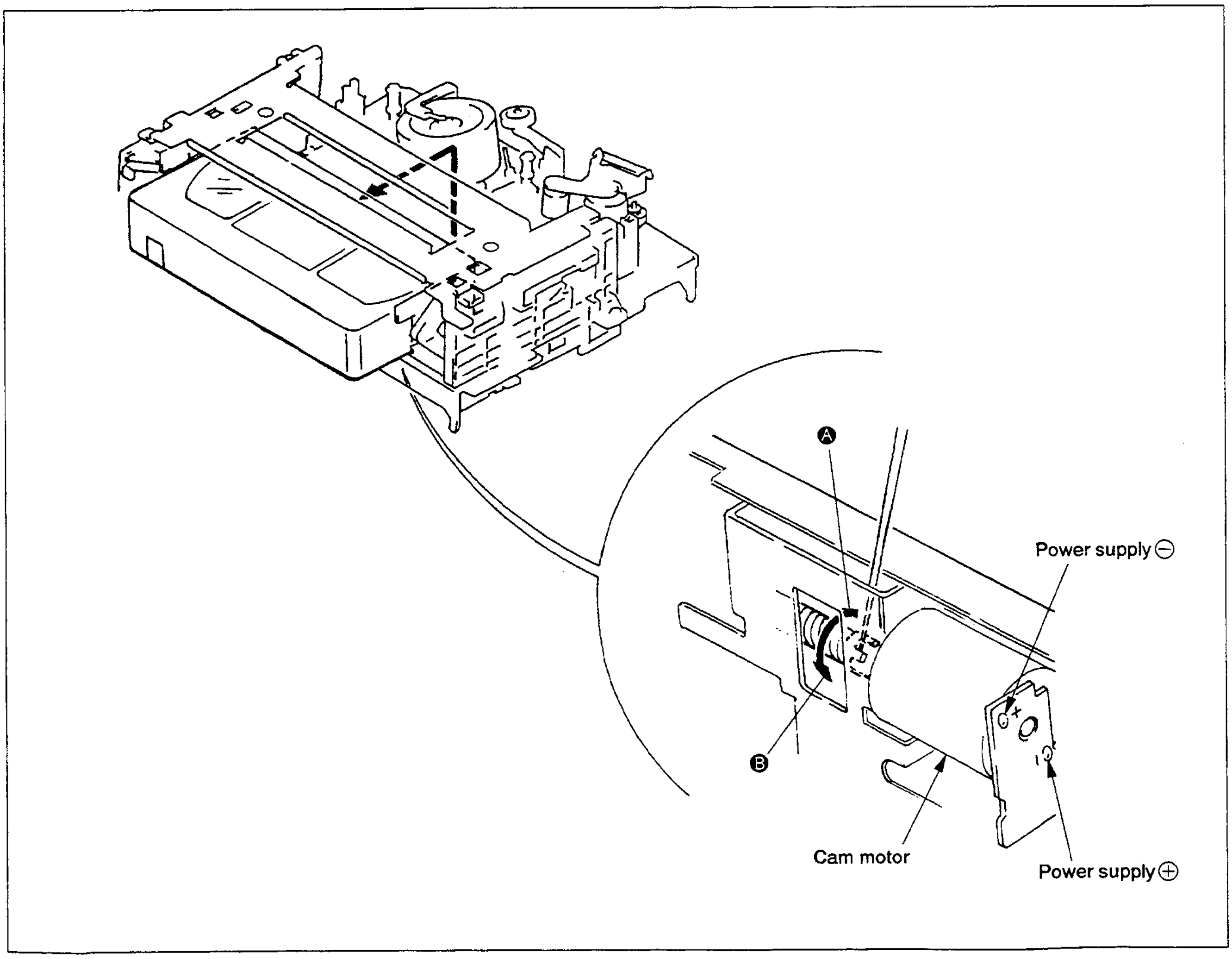


Fig. 1-2

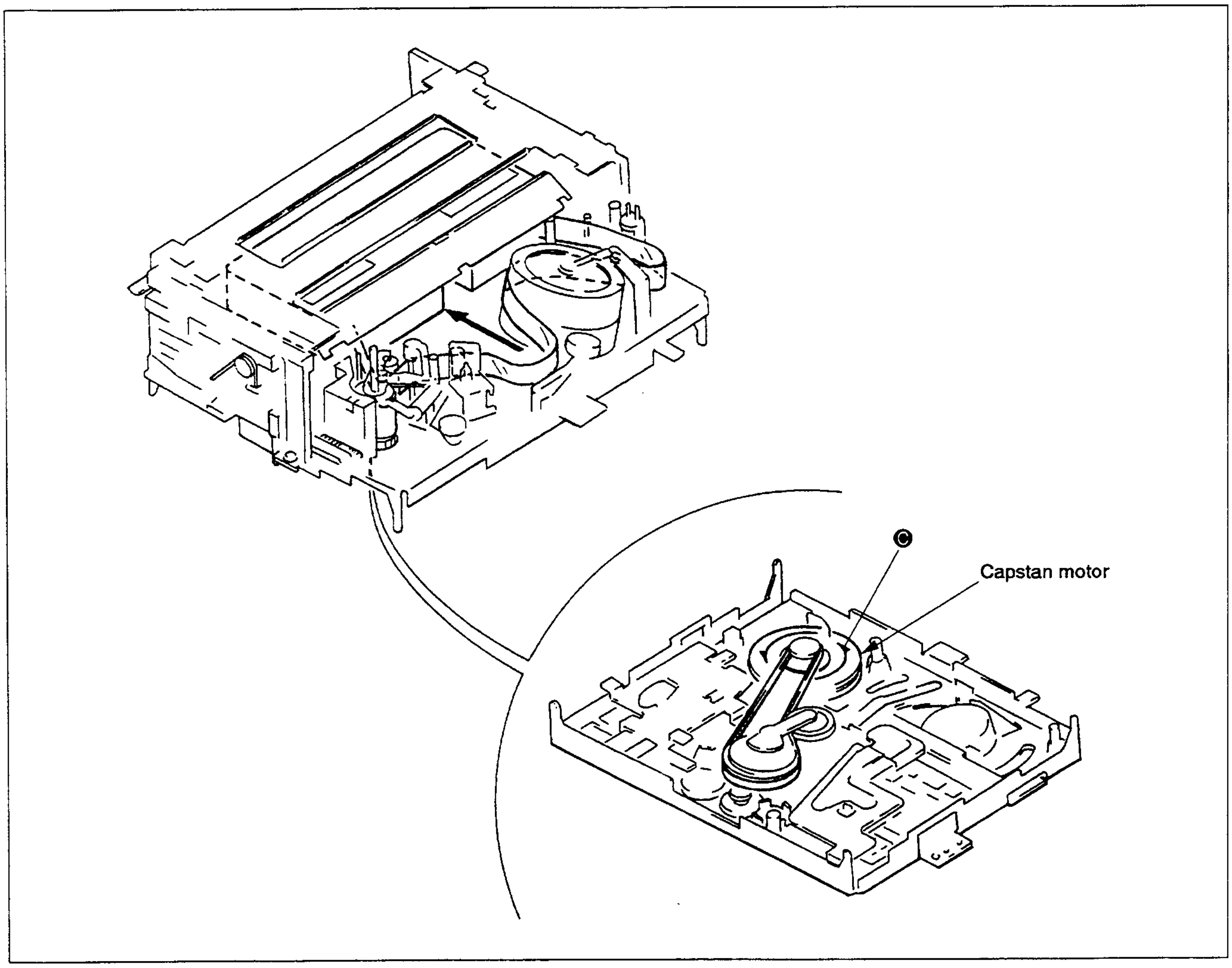

©
Capstan motor

Fig. 1-3

1-3. HOW TO COMPLETE THREADING WITHOUT CASSETTE COMPARTMENT (Fig. 1-4)

Note 1: Put the FL block assembly removed the FL top plate on the bottom not to put dust or grease the top sensor and the end sensor luminous plates or not to scratch them. (Fig. A)

1) Pull out AC plug from wall outlet.
2) Shade near the end and top sensors with a black masking tape on the like.
3) Press cassette in/rec proof switch with a tip of screwdriver or the like.
4) Connect AC plug to wall outlet.
5) Release cassette in/rec proof switch by putting off a tip of screwdriver or the like.
   (At this time, power turns on, rewind operates for 10 seconds, after that power turns off.)

Note 2: In this condition, each mode can be set to video cassette recorder. (including recording mode)
However, fast forward should be done after rewinding for 15 seconds or more.

Note 3: After above mentioned operation, be sure to return the mode in the following order.

1) Remove the tape near the end and top sensors.
2) Pull out AC plug from wall outlet to reset the system control microcomputer.

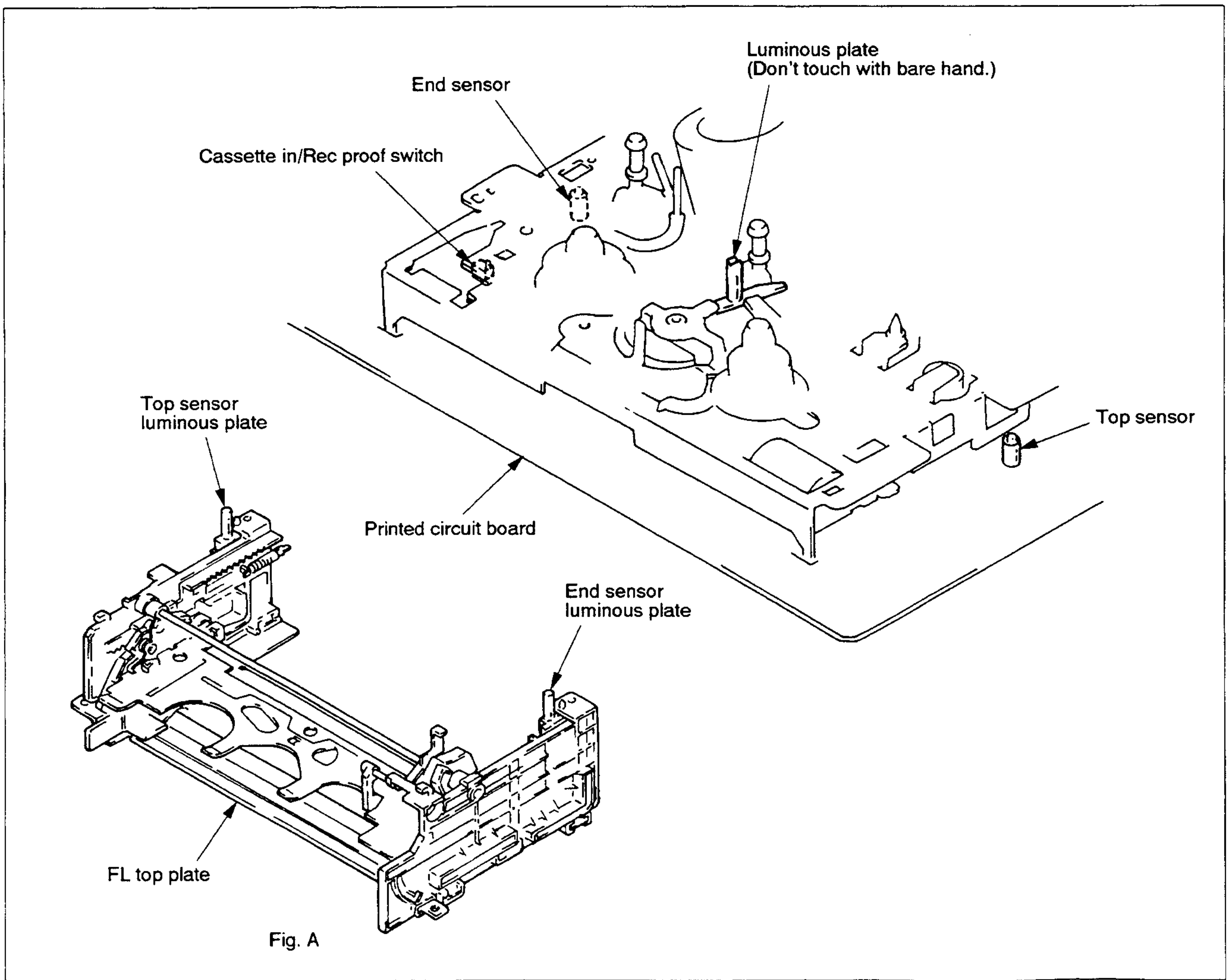

Luminous plate
(Don't touch with bare hand.)
End sensor
Cassette in/Rec proof switch
Top sensor
luminous plate
Top sensor
Printed circuit board
End sensor
luminous plate
FL top plate
Fig. A

Fig. 1-4

2. PERIODIC CHECK AND REPLACEMENT

In order to obtain the best performance from this unit and make full use of its capabilities, and to extend the life of the unit and tapes, it is recommended that the following periodic checks and maintenance be performed.

* The following must be done after every repair regardless of how many hours the user has operated the machine.

2-1. CLEANING OF ROTATING HEAD DISK ASSEMBLY

1) Press a chamois cloth (Jig Ref. No. J-9) which has been dipped in cleaning fluid (Jig Ref. No. J-8) lightly against the rotating drum assembly, then do the cleaning by slowly rotating the rotating head disk by hand. (Never try to clean by using the motor to turn it.)
2) Never try to clean by moving the chamois cloth at a vertical angle to the head tip. There is a very great danger of damaging the head tip if this is done.

2-2. CLEANING OF THE TAPE MOVEMENT SYSTEM

1) Clean the surfaces which the tape contacts during its movement (tape guide, drum assembly surface, capstan, pinch roller, etc.) with a chamois cloth that has been dipped in cleaning fluid.

2-3. CLEANING THE DRIVE SYSTEM

1) Clean the driving parts with a cloth that been dipped in cleaning fluid.

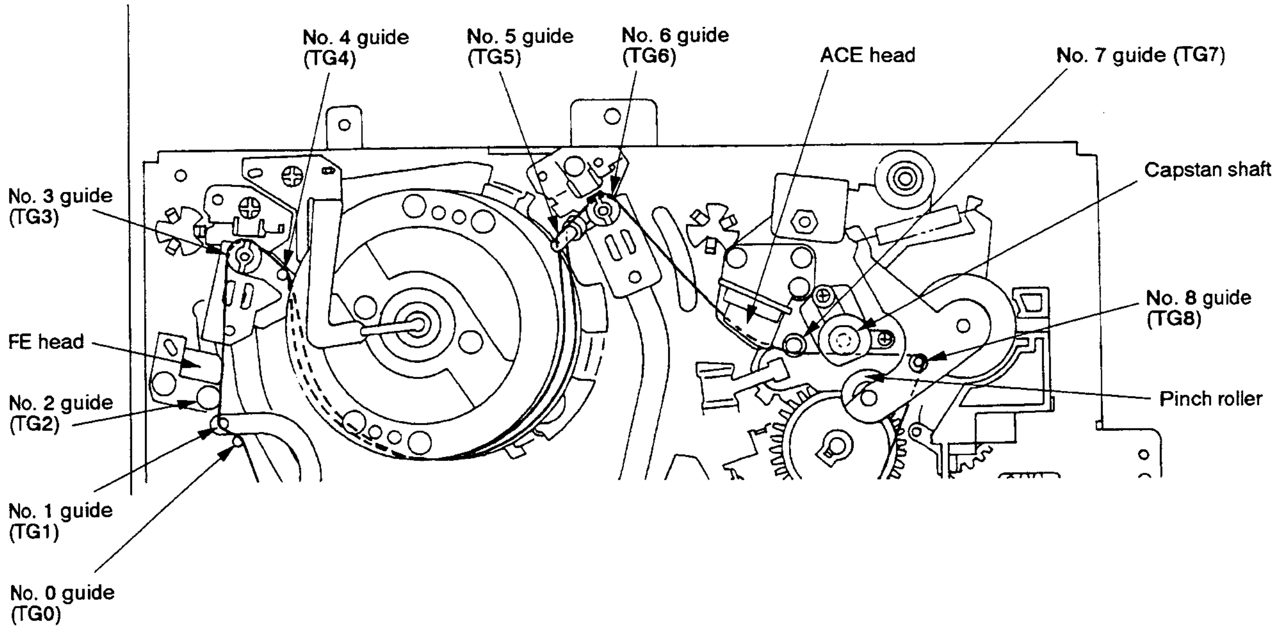

No. 4 guide (TG4)
No. 5 guide (TG5)
No. 6 guide (TG6)
ACE head
No. 7 guide (TG7)
Capstan shaft
No. 3 guide (TG3)
FE head
No. 2 guide (TG2)
No. 1 guide (TG1)
No. 0 guide (TG0)
No. 8 guide (TG8)
Pinch roller

Fig. 2-1 Parts requiring cleaning

2-4. PERIODIC CHECK ITEMS

Perform the maintenance and check listed on the table below, according to users operating hours.

Operating Hours (H) **Maintenance & Check**		**500**	**1,000**	**1,500**	**2,000**	**2,500**	**3,000**	**3,500**	**4,000**	**4,500**	**5,000**	**Remarks**
Tape Transportation System	Cleaning of tape transportation system	○	○	○	○	○	○	○	○	○	○	This cleaning must be done whenever a repair is made.
	Cleaning and degaussing of ACE assembly	○	○	○	○	○	○	○	○	○	○	
	Cleaning & degaussing of upper drum assembly	○	○	○	○	○	○	○	○	○	○	The life of the head varies, depending on operational conditions and method.
Performance Confirmation	Abnormal sound	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust or replace the section which causes abnormal sound.
	Measurement of FWD back tension	–	☆	–	☆	–	☆	–	☆	–	☆	Confirmation must be made according to 4-1-1. Specified value: adjust to 36 to 44 g•cm (when measured with torque cassette tape)
	Confirmation of brake system	–	☆	–	☆	–	☆	–	☆	–	☆	Confirmation must be made according to section.
	Confirmation of record & playback functions	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Perform the confirmation whenever repair is made.
	Measurement of forward torque	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust to 70 to 120 g•cm

○ Cleaning ☆ Confirmation

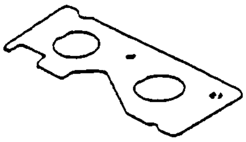
Note: On overhaul

When overhauling the unit, replace parts as indicated in the above table.

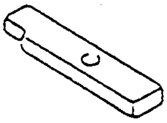
2-5. TOOLS AND FIXTURES REQUIRED FOR SERVICING

Ref No.	Name	Part No.	Carved Jig No.	Remarks
J-1	Master Plane	H-7099-279-H		Applicable to S-VHS
J-2	Reel Disk Height Jig	H-7099-038-H		
J-3	Torque Gauge Adaptor	H-7099-035-H		
J-4	0.93 mm Torque Gauge	H-7099-039-H		
J-5	Hex. Wrench	H-7099-202-H		
J-6	Torque Measurement Cassette VHT-063S	J-6082-011-A		For FWD & back tension torque measurement.
	Torque Measurement Cassette VHT-404S	J-6082-012-A		For CUE and review torque measurement.
J-7	Alignment Tape JVC-MH-1 (NTSC) 24HASF-2 (NTSC Hi-Fi) JVC-MH-2 (PAL) JVC-MH-4 (SECAM)	 H-7099-046-H H-7099-153-H H-7099-052-H H-7099-053-H		
J-8	Cleaning Fluid	Y-2031-001-0	————	
J-9	Chamois Leather	2-034-697-00	————	
J-10	Head Demagnetizer	Widely available	————	Demagnetize video heads and audio heads.
J-11	Dental Mirror (With handle) Dental Mirror (Mirror)	J-6080-029-A J-6080-030-1	SL-5052	Tape path and tape traveling adjustments or checks.
J-12	FLOIL SG-055G	7-651-000-09		
J-13	Diamond Oil NT-68	7-661-018-18		
J-14	Screw Lock G (1401B)	7-432-114-11		

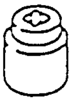
J-1



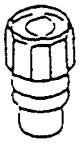
J-2



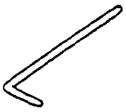
J-3



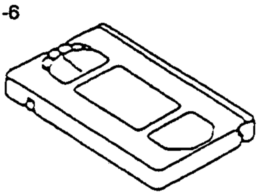
J-4



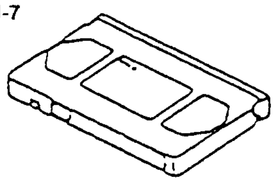
J-5



J-6

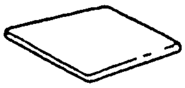


J-7

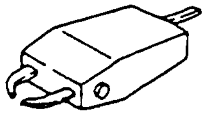


J-8

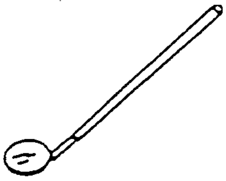
J-9



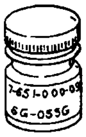
J-10



J-11

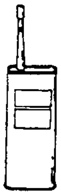


J-12



J-13

J-14



3. MAINLY MECHANICAL PARTS REPLACEMENT

Notes:

- Refer to the service manual, "DISASSEMBLY" for removal of the cabinet and boards.
- On mounting, while referring to notes on mounting perform reversely in the removal order.
- When replacing greased parts, grease them in the same way.
- Do not oil, grease or touch with bare hands the surfaces contacts tape of guides and brake shoes.
- Install gears to engage each other.
- Basically, disassembling and assembling should be done in the unthreading-end condition.

3-1. FL BLOCK ASSEMBLY (Fig. 3-1)

1) Remove screws ①.
2) Remove FL block assembly ② in the arrow Ⓐ direction.

Note: Be careful not to damage claws on the bottom and front.

[Note on Mounting]

- First insert claws on the bottom and front not to damage.
- Engage FL slide plate to FL driving gear with slightly sliding FL slide plate. (Fig. A)
- Keep clean top sensor and end sensor luminous plates. (Refer to 1-3.)

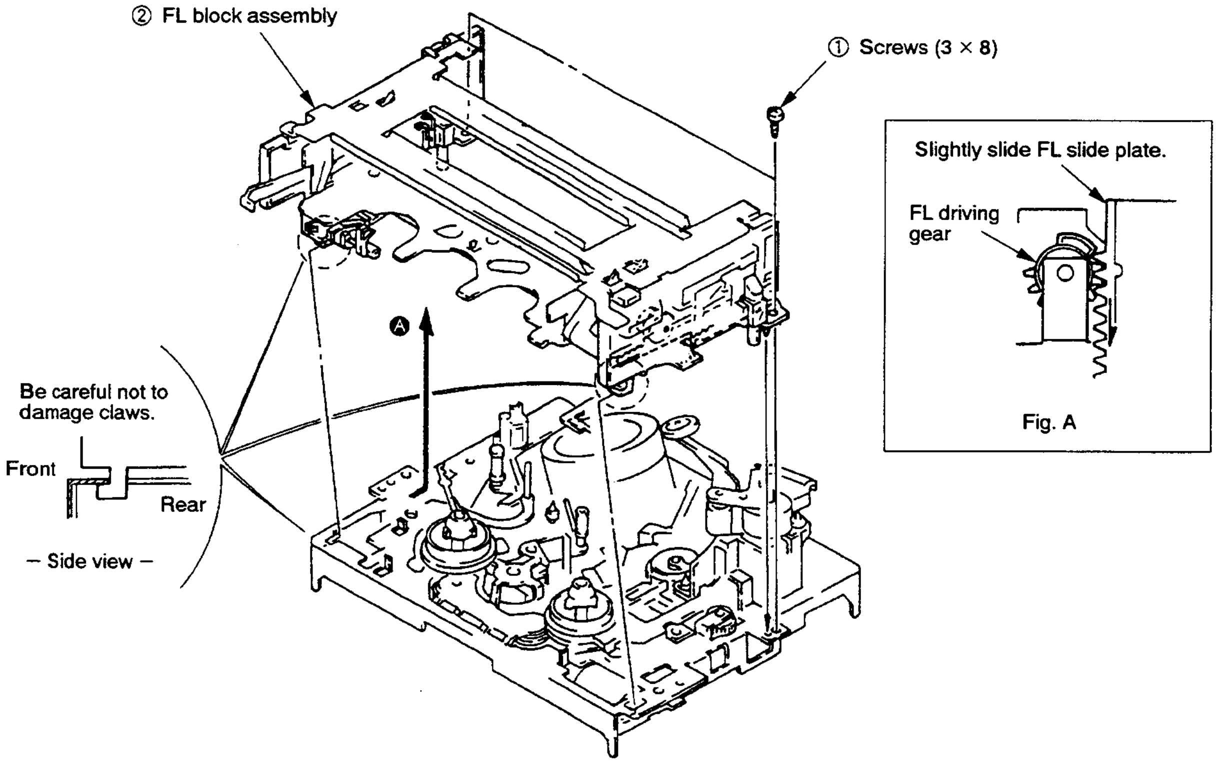

② FL block assembly
① Screws (3 × 8)
Ⓐ
Be careful not to damage claws.
Front
Rear
– Side view –
Slightly slide FL slide plate.
FL driving gear
Fig. A

Fig. 3-1

3-2. DRUM ASSEMBLY (Fig. 3-2)

1) Remove screw ①.
2) Remove ground shaft assembly ② not to touch its tip with bare hand or tools.
3) Remove screws ③ to remove drum assembly ④.

[Note on Mounting]

- Don't touch head chips ⑤ and ground shaft assembly ④ with bare hand or tools.
- Keep clean the surface contacts tape of drum assembly ④.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

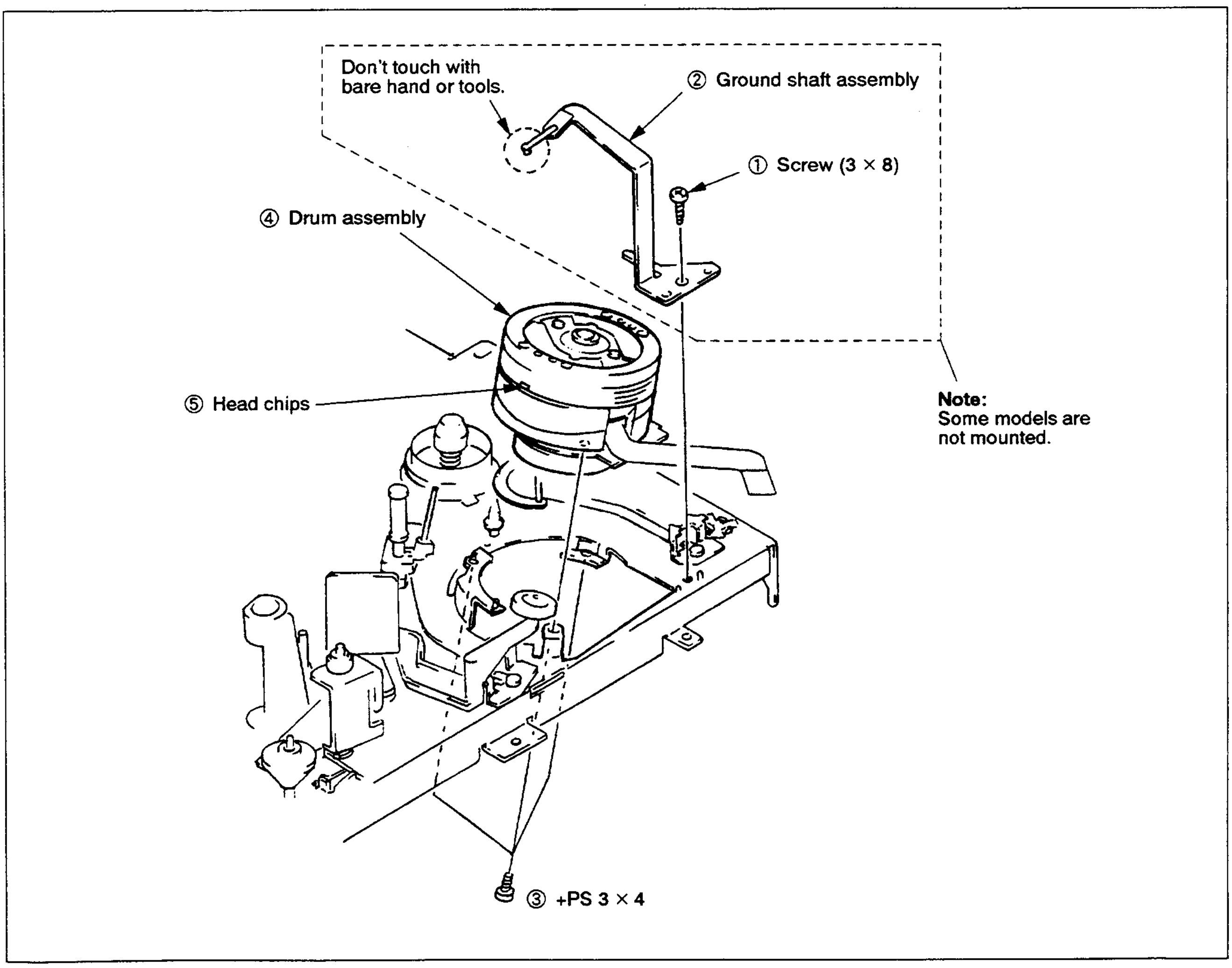

Don't touch with bare hand or tools.
② Ground shaft assembly
① Screw (3 × 8)
④ Drum assembly
⑤ Head chips
Note:
Some models are not mounted.
③ +PS 3 × 4

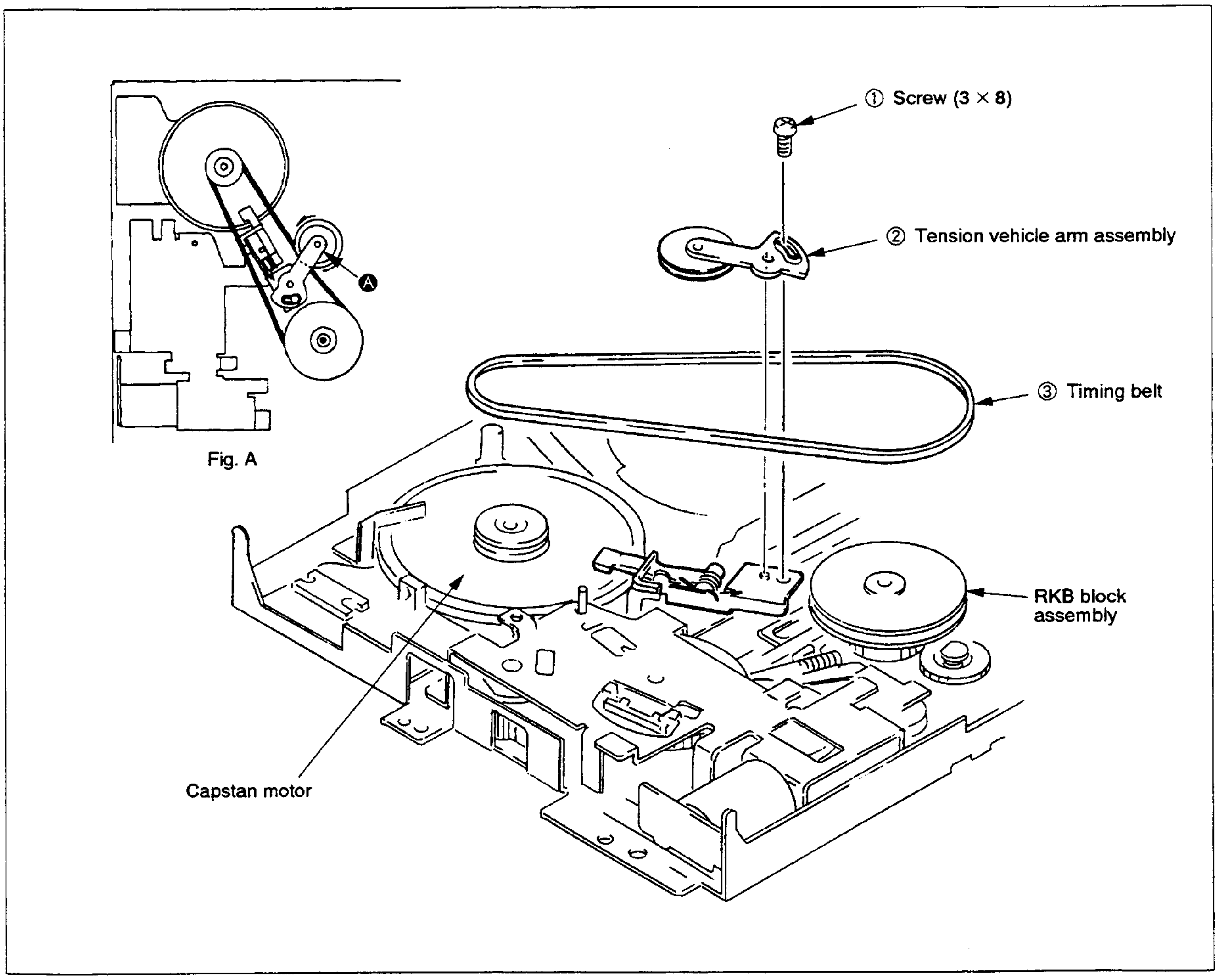
Fig. 3-2

3-3. TIMING BELT (Fig. 3-3)

1) Remove screw ① to remove tension vehicle arm assembly ②.
2) Remove timing belt ③.

[Note on Mounting]

- Tighten screw ① while pressing tension vehicle arm in the arrow Ⓐ direction.



① Screw (3 × 8)
② Tension vehicle arm assembly
③ Timing belt
RKB block assembly
Capstan motor
Ⓐ
Fig. A

Fig. 3-3

3-4. CAP BRAKE ASSEMBLY (Fig. 3-4)

1) Remove tension vehicle arm assembly. (Refer to 3-3)
2) Remove torsion coil spring ① from portion 🅐 to remove CAP brake assembly.

[Note on Mounting]

- Mount torsion coil spring ① to CAP brake assembly ② in the order 🅐 and 🅑. (Fig. A)
- Put the fulcrum of CAP brake assembly ② to CAP brake shaft ③ and the tip of torsion coil spring to 🅒.
- Don't touch brake shoe 🅓 with bare hand.

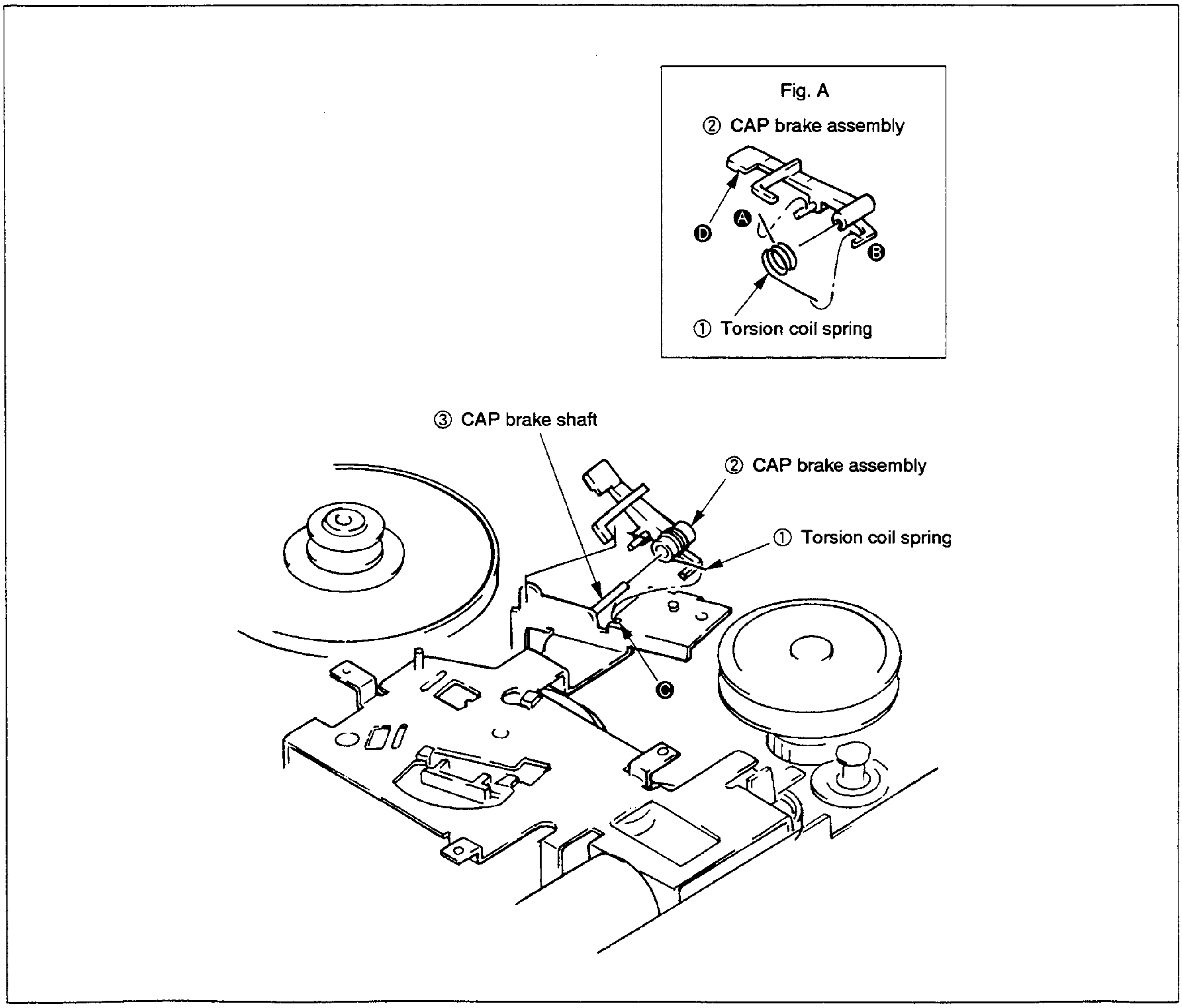


Fig. A
② CAP brake assembly
🅓
🅐
🅑
① Torsion coil spring
③ CAP brake shaft
② CAP brake assembly
① Torsion coil spring
🅒

Fig. 3-4

3-5. TG2 ROLLER, FE HEAD ASSEMBLY (Fig. 3-5)

1) Remove claw Ⓐ to pull out TG2 roller ①.
2) Remove screw ② to pull out FE head assembly.

[Note on Mounting]

- Keep clean the surface contacts tape of TG2 roller ①.

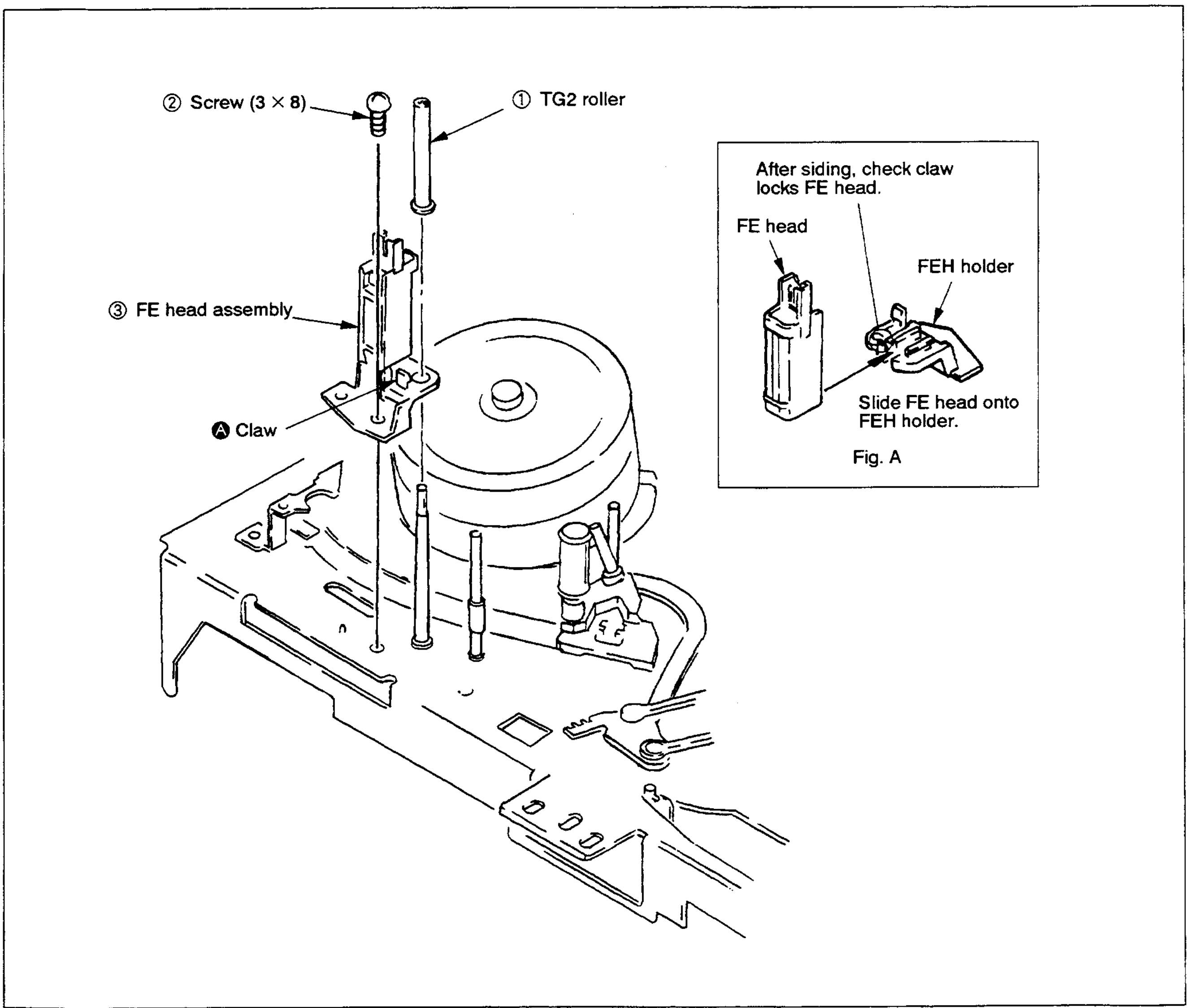

② Screw (3 × 8)
① TG2 roller
③ FE head assembly
Ⓐ Claw
After siding, check claw locks FE head.
FE head
FEH holder
Slide FE head onto FEH holder.
Fig. A

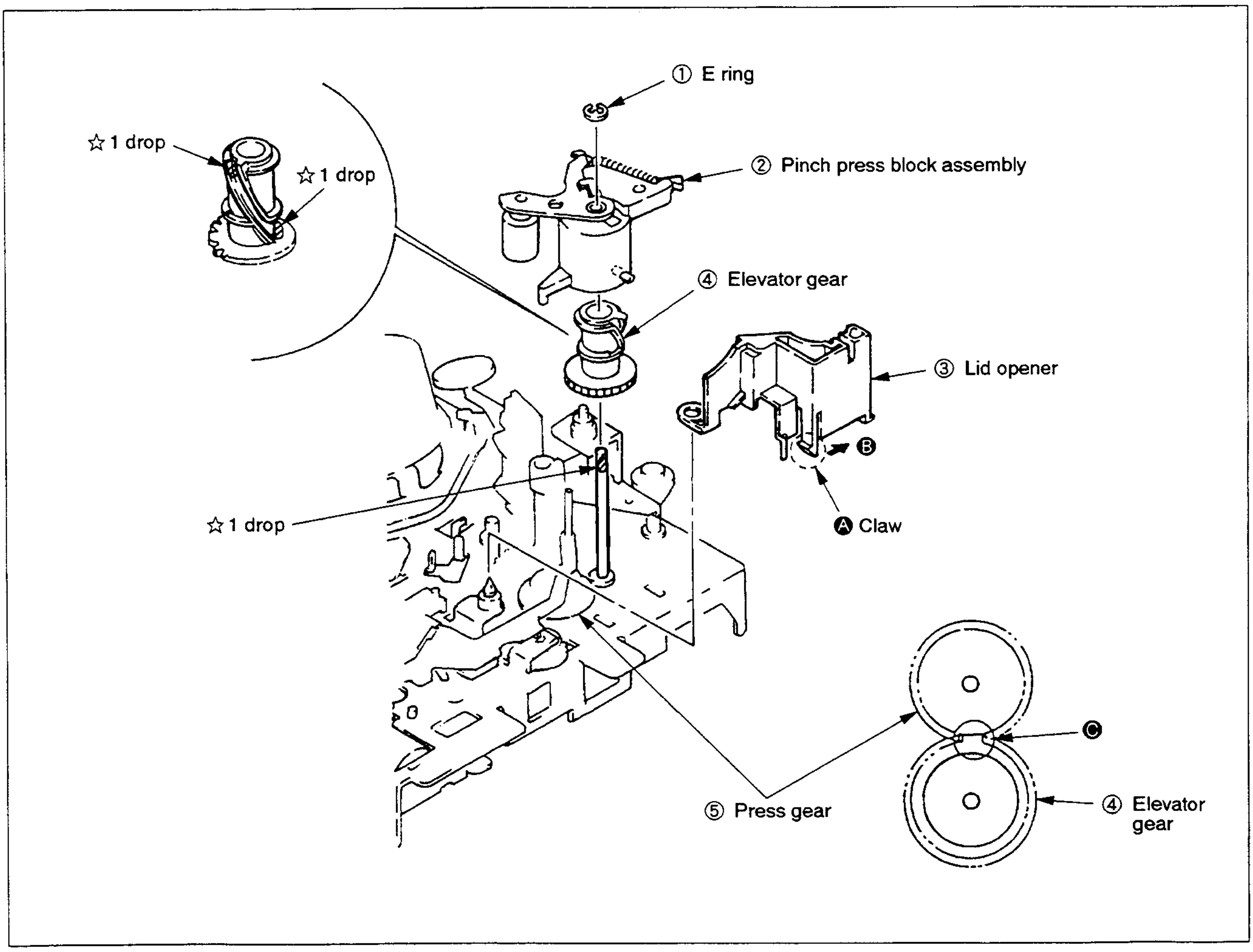
Fig. 3-5

3-6. PINCH PRESS BLOCK ASSEMBLY, ELEVATOR GEAR (Fig. 3-6)

1) Remove E ring ① to pull out pinch press block assembly ②.
2) Remove lid opener ③ by pressing claw Ⓐ in the arrow Ⓑ direction.
3) Pull out elevator gear ④.

[Note on Mounting]

- Apply grease FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portions.
- Be sure to match the phase Ⓒ between elevator gear ④ and press gear ⑤ on mounting elevator gear ④.



① E ring
☆1 drop
☆1 drop
② Pinch press block assembly
④ Elevator gear
③ Lid opener
Ⓑ
☆1 drop
Ⓐ Claw
Ⓒ
⑤ Press gear
④ Elevator gear

Fig. 3-6

3-7. ACE BLOCK ASSEMBLY (Fig. 3-7)

1) Move torsion coil spring (ACE) ① in the arrow Ⓐ direction.
2) Remove ACE adjustment screw ②.
3) Remove AC height adjustment nut ③ to pull out ACE block assembly ④.

[Note on Mounting]

- Keep clean the surface contacts tape of ACE block assembly ④.
- Be sure to hang torsion coil spring (ACE) ① in the arrow Ⓑ direction.
- Set ACE adjustment screw ② to the height as shown in Fig. A.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.
- After adjustment apply Screw Lock G (1401B) (Jig Ref. No. J-14) at ☆ marked portion.

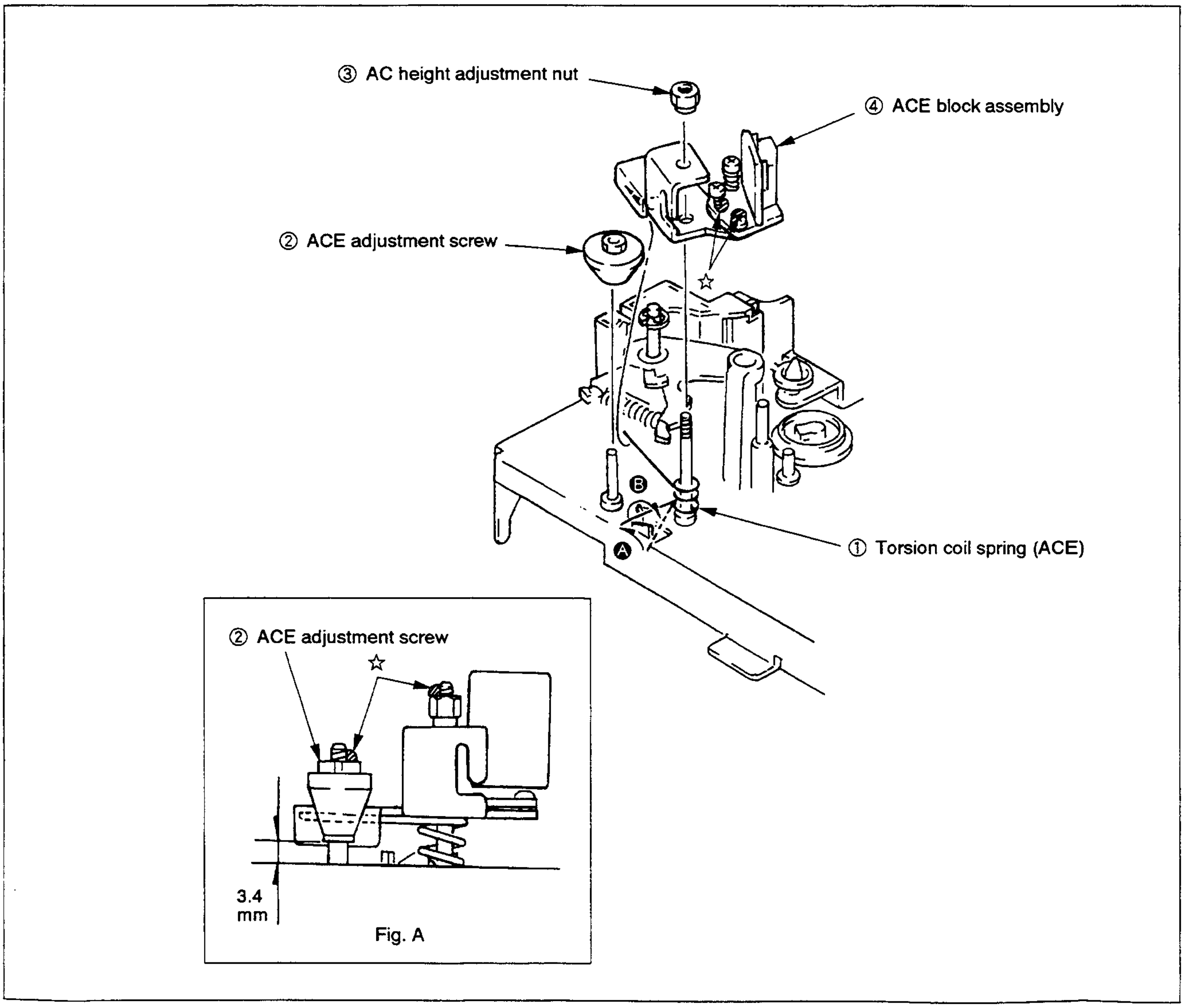

③ AC height adjustment nut
④ ACE block assembly
② ACE adjustment screw
☆
Ⓑ
Ⓐ
① Torsion coil spring (ACE)
② ACE adjustment screw
☆
3.4 mm
Fig. A

Fig. 3-7

3-8. TG3, TG6 GUIDE ROLLER ASSEMBLIES (Fig. 3-8)

1) Loosen screw ① and pull out. TG3 guide roller assembly ② by turning it in the arrow Ⓐ direction.
2) Loosen screw ③ and pull out TG6 guide roller assembly ④ by turning it in the arrow Ⓑ direction.

[Note on Mounting]

- Keep clean the surface contacts tape of TG3 and TG6 guide roller assemblies ②, ④.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

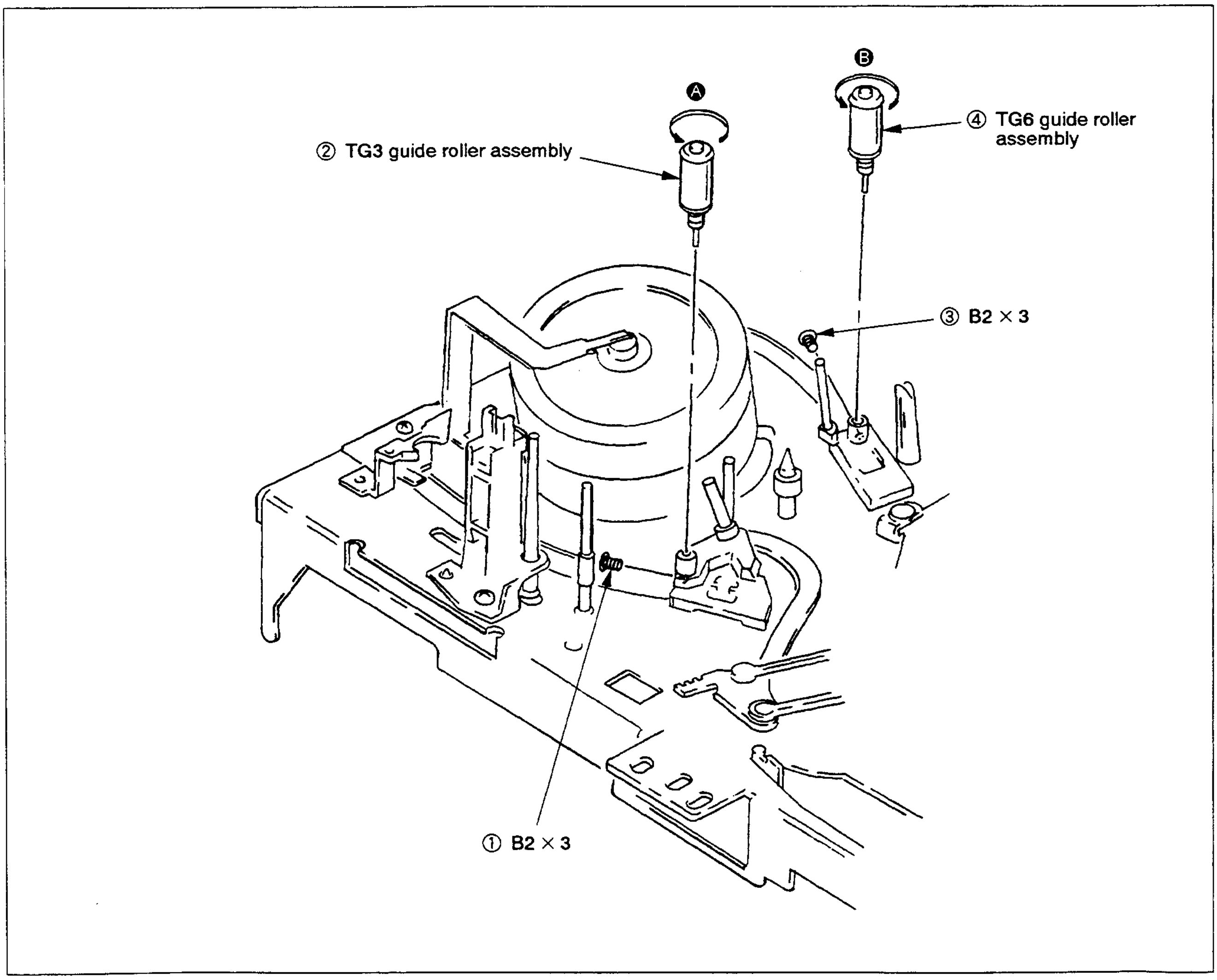

Ⓑ
Ⓐ
④ TG6 guide roller assembly
② TG3 guide roller assembly
③ B2 × 3
① B2 × 3

Fig. 3-8

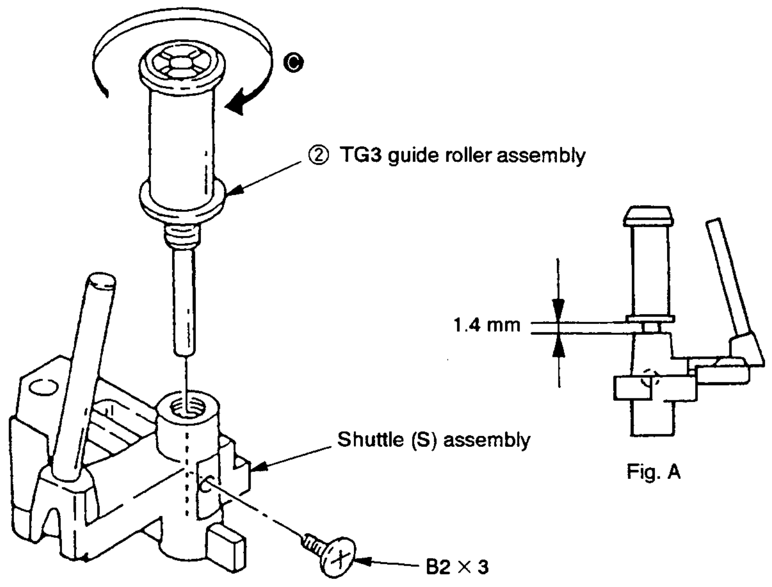

Ⓒ
② TG3 guide roller assembly
1.4 mm
Shuttle (S) assembly
Fig. A
B2 × 3

Fig. 3-9

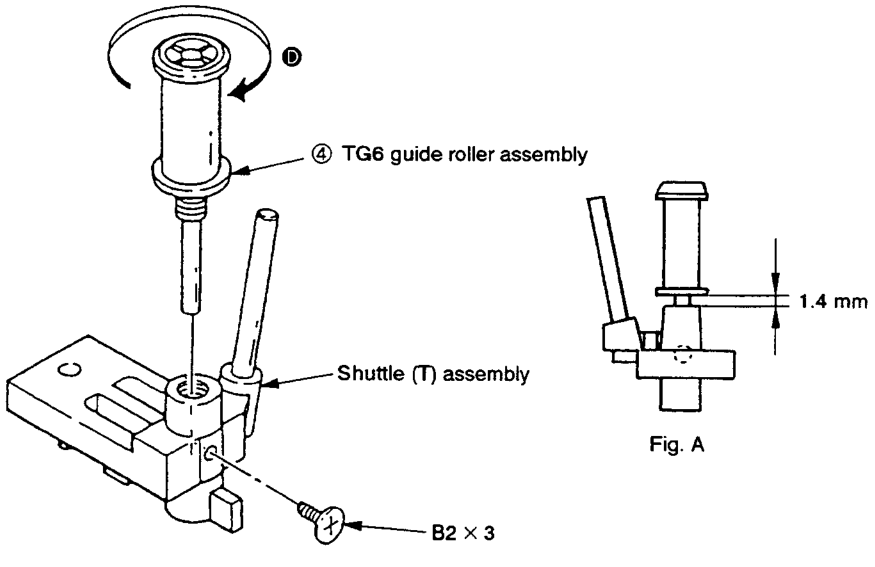

Ⓓ
④ TG6 guide roller assembly
1.4 mm
Shuttle (T) assembly
Fig. A
B2 × 3

Fig. 3-10

3-9. CAPSTAN MOTOR (Fig. 3-11)

1) Remove timing belt. (Refer to 3-3.)
2) Remove CAP brake assembly. (Refer to 3-4.)
3) Remove screws ① to pull out capstan motor ②.

[Note on Mounting]

- Keep clean the surface contacts tape of capstan motor ②.
- On tightening screws ①, first tighten screw A temporarily, next tighten screws in the order B to C to A.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

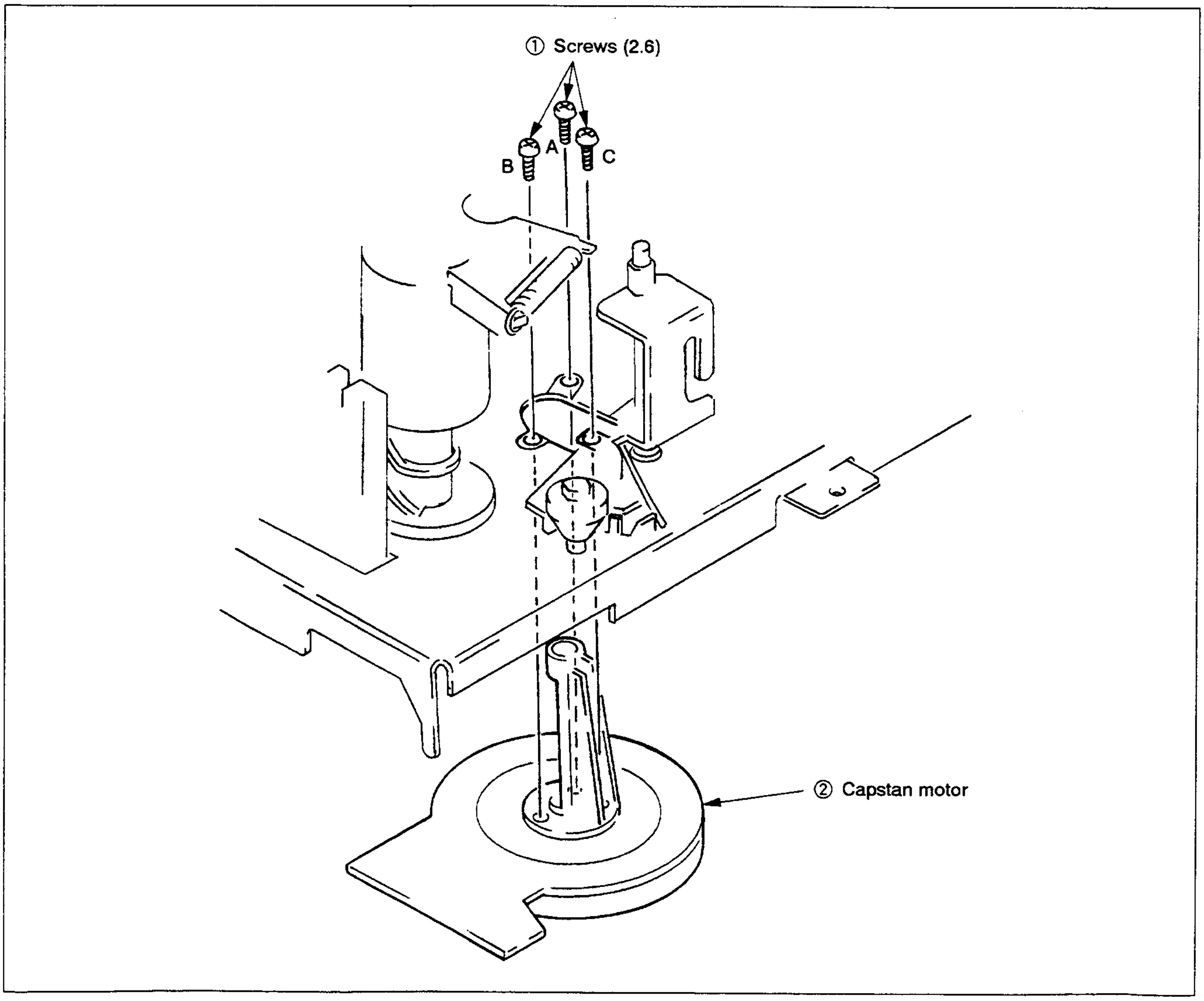


Fig. 3-11

3-10. MAIN BRAKE ASSEMBLIES S AND T (Fig. 3-12)

1) Remove tension spring ①.
2) Remove stopper washer (2) ② to remove neutrality arm ③.
3) Remove pendulum compulsion arm ④ and tension coil spring ⑤.
4) Remove stopper washer (2) ⑥ to remove main brake S assembly ⑦.
5) Remove stopper washer (2) ⑧ to remove main brake T assembly ⑨.

[Note on Mounting]

- Don't touch brake shoes 🅐 and 🅑 with bare hand.
- Apply FLOIL FG-055G (Jig Ref. No. J-12) to ☆ marked portions.

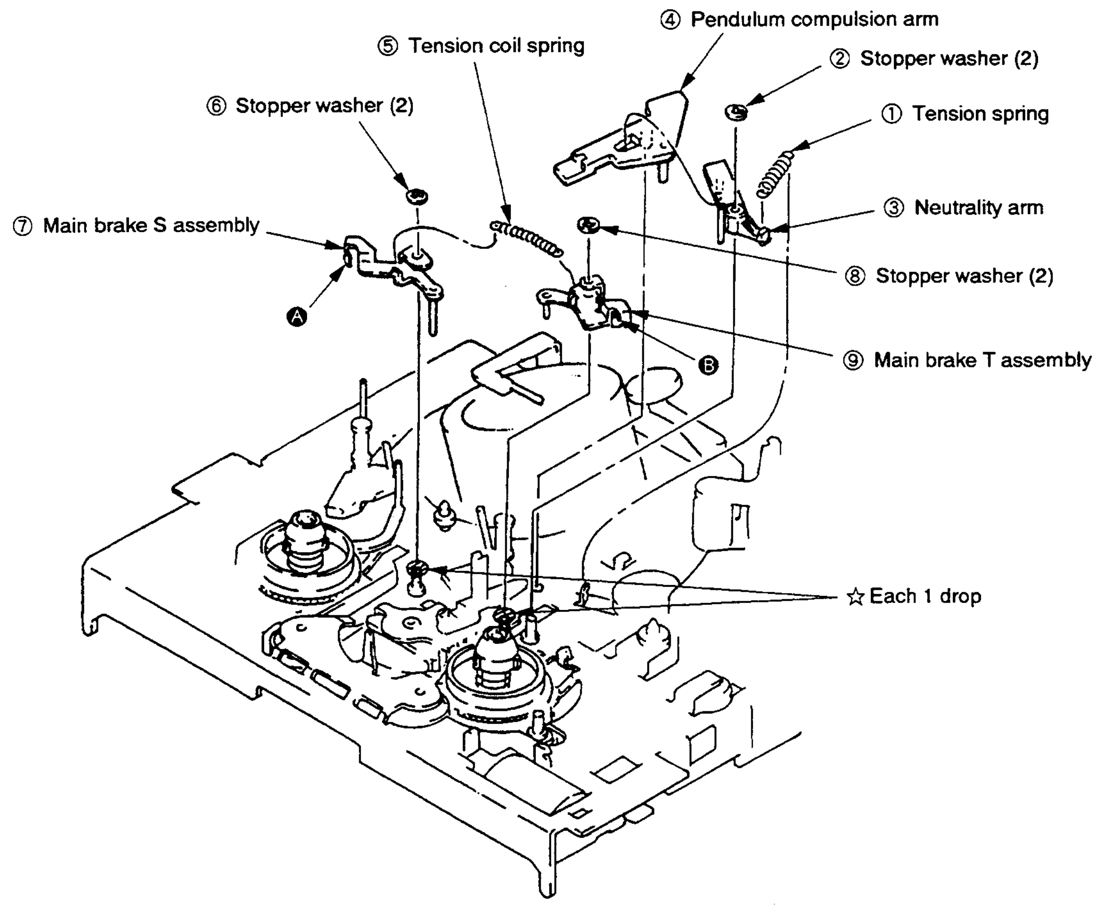

④ Pendulum compulsion arm
⑤ Tension coil spring
② Stopper washer (2)
⑥ Stopper washer (2)
① Tension spring
③ Neutrality arm
⑦ Main brake S assembly
⑧ Stopper washer (2)
🅐
🅑
⑨ Main brake T assembly
☆Each 1 drop

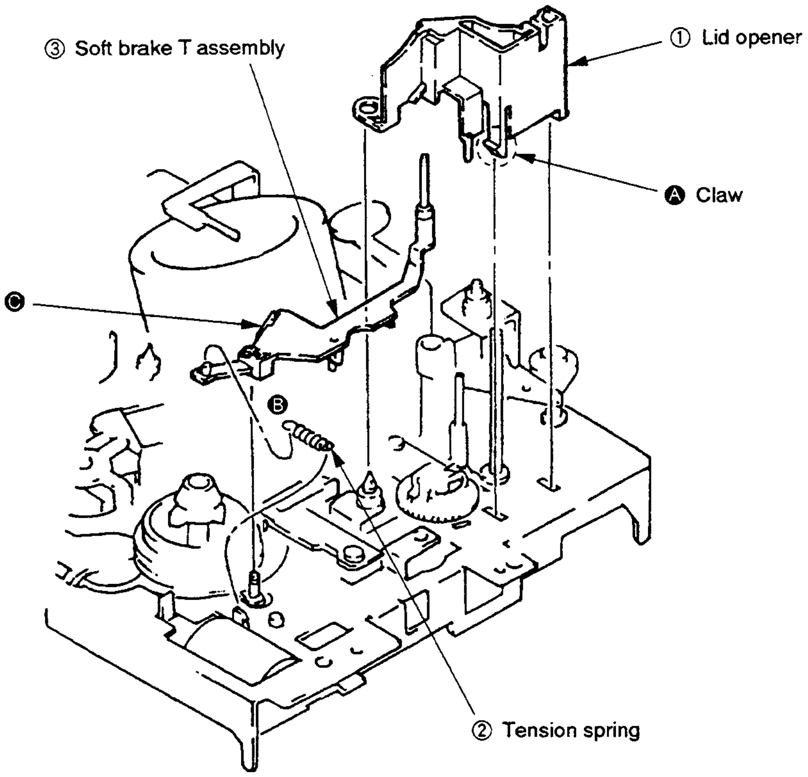
Fig. 3-12

3-11. SOFT BRAKE T ASSEMBLY (Fig. 3-13)

1) Remove pinch press block assembly. (Refer to 3-6.)
2) Remove lid opener ① carefully not to damage claw Ⓐ.
3) Remove tension spring ② from side Ⓑ to pull out soft brake T assembly ③.

[Note on Mounting]

- Don't touch brake shoes Ⓒ with bare hand.



③ Soft brake T assembly
① Lid opener
Ⓐ Claw
Ⓒ
Ⓑ
② Tension spring

Fig. 3-13

3-12. RVS BRAKE ARM ASSEMBLY, REEL TABLE (T) ASSEMBLY (Fig. 3-14)

1) Remove main brake T assembly. (Refer to 3-10.)
2) Remove soft brake T assembly. (Refer to 3-11.)
3) Remove tension coil spring ① in the order Ⓐ to Ⓑ.
4) Remove RVS brake arm assembly ②.
5) Remove stopper washer (2) ③ to pull out reel table (T) assembly ④.

[Note on Mounting]

- Apply one drop of Diamond Oil NT-68 (Jig Ref. No. J-13) to ☆ marked portion before mounting reel table (T) assembly ④. (Fig. A)
- Don't touch the hatched portion on reel table (T) assembly ④ and brake shoe Ⓒ of RVS brake arm assembly ② with bare hand.

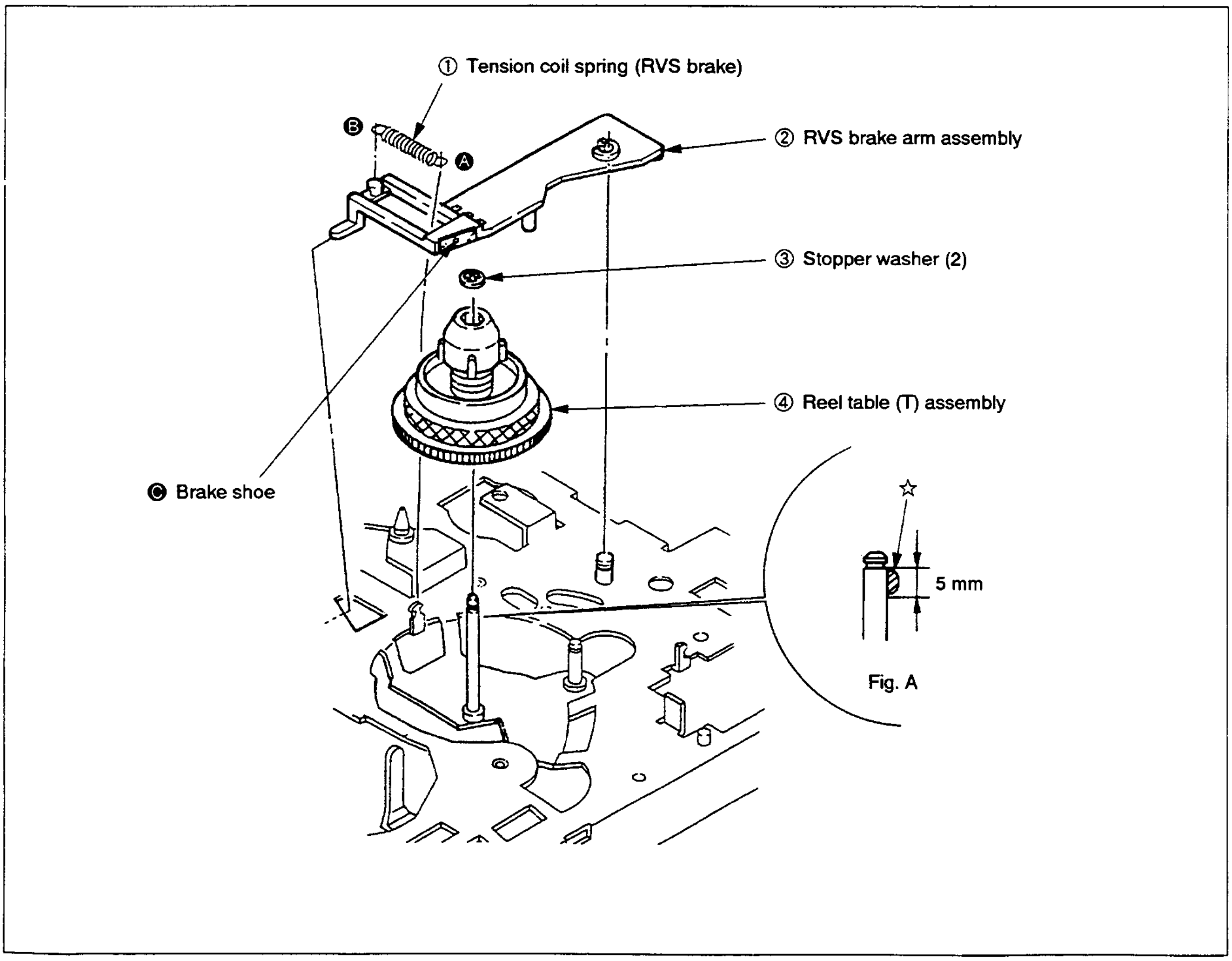

① Tension coil spring (RVS brake)
Ⓑ
Ⓐ
② RVS brake arm assembly
③ Stopper washer (2)
④ Reel table (T) assembly
Ⓒ Brake shoe
☆
5 mm
Fig. A

Fig. 3-14

3-13. TG8 ASSEMBLY (Fig. 3-15)

1) Remove TG8 retainer ① to pull out TG8 assembly ②.

[Note on Mounting]

- Apply FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portion.
- Keep clean the surface contacts tape of TG8 assembly ②.
- Be careful not to change the shape of TG8 retainer ①.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

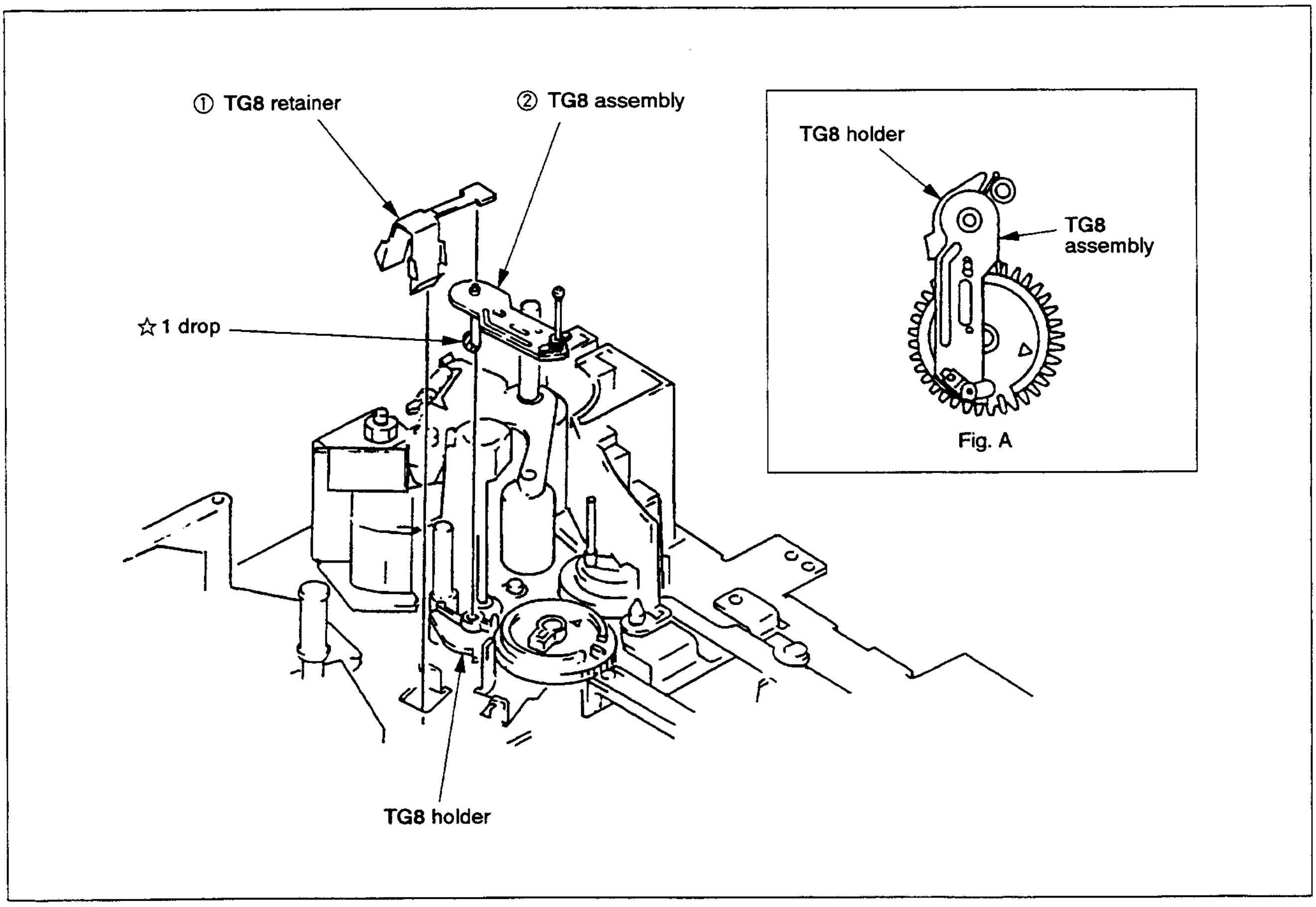

① TG8 retainer
② TG8 assembly
☆1 drop
TG8 holder
TG8 holder
TG8 assembly
Fig. A

Fig. 3-15

3-14. TG8 HOLDER (Fig. 3-16)

1) Remove TG8 assembly. (Refer to 3-13)
2) Pull out TG8 holder ①.

[Note on Mounting]

- Be careful about the direction of TG8 holder ①. (🅐 of Fig. A)

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

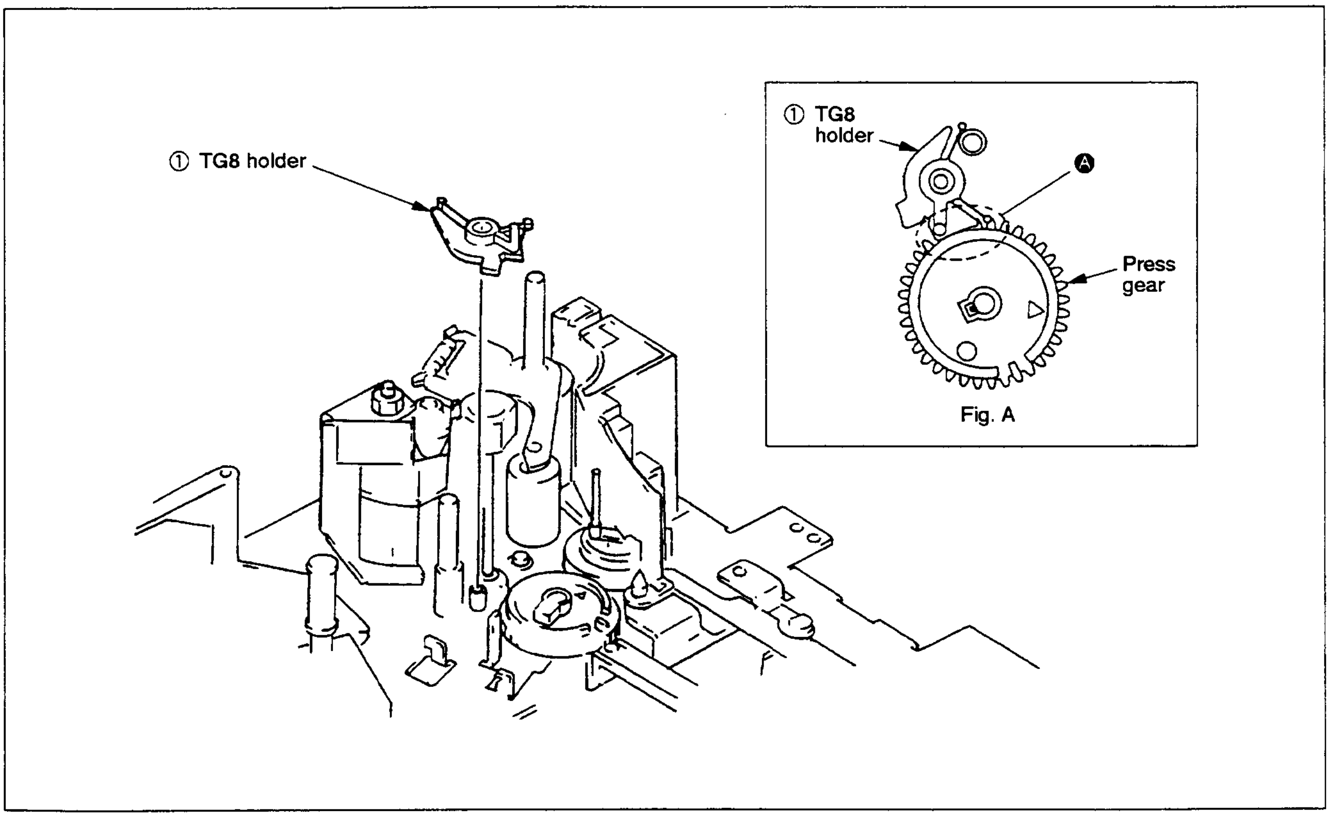

① TG8 holder
① TG8 holder
🅐
Press gear
Fig. A

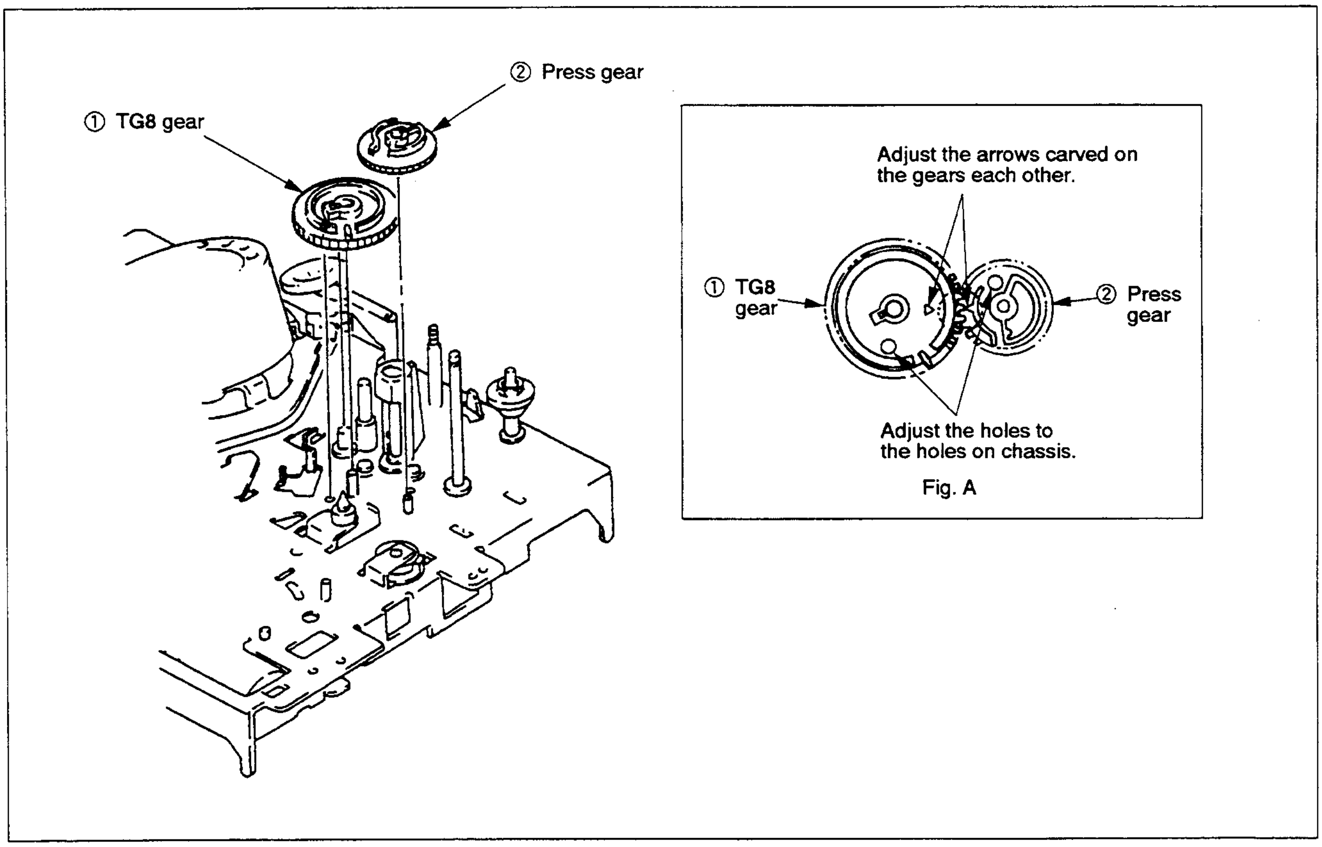
Fig. 3-16

3-15. TG8 AND PRESS GEARS (Fig. 3-17)

1) Remove pinch press block assembly. (Refer to 3-6.)
2) Remove soft brake T assembly. (Refer to 3-11.)
3) Remove TG8 assembly. (Refer to 3-13.)
4) Remove TG8 holder. (Refer to 3-14.)
5) Pull out TG8 gear ① or press gear ②.

[Note on Mounting]

- Adjust the holes on gears to the holes on chassis. (Fig. A)
- Adjust the arrows carved on gears each other. (Fig. A)



Adjust the arrows carved on the gears each other.

Adjust the holes to the holes on chassis.

Fig. A

Fig. 3-17

3-16. CAM MOTOR CHASSIS BLOCK ASSEMBLY, UPPER/LOWER COMMUNICATION GEAR (Fig. 3-18)

1) Remove timing belt. (Refer to 3-3.)
2) Remove CAP brake assembly. (Refer to 3-4.)
3) Remove screws ① to remove cam motor chassis assembly ②.
4) Pull out upper/lower communication gear ③.

[Note on Mounting]

- First, check main slider ④ slides fully in the arrow Ⓔ direction.
- Set rotary encoder switch position to "E" seen from the window of cam motor chassis. (Fig. A)
- Tighten screws ① in the order Ⓐ to Ⓑ to Ⓒ to Ⓓ.

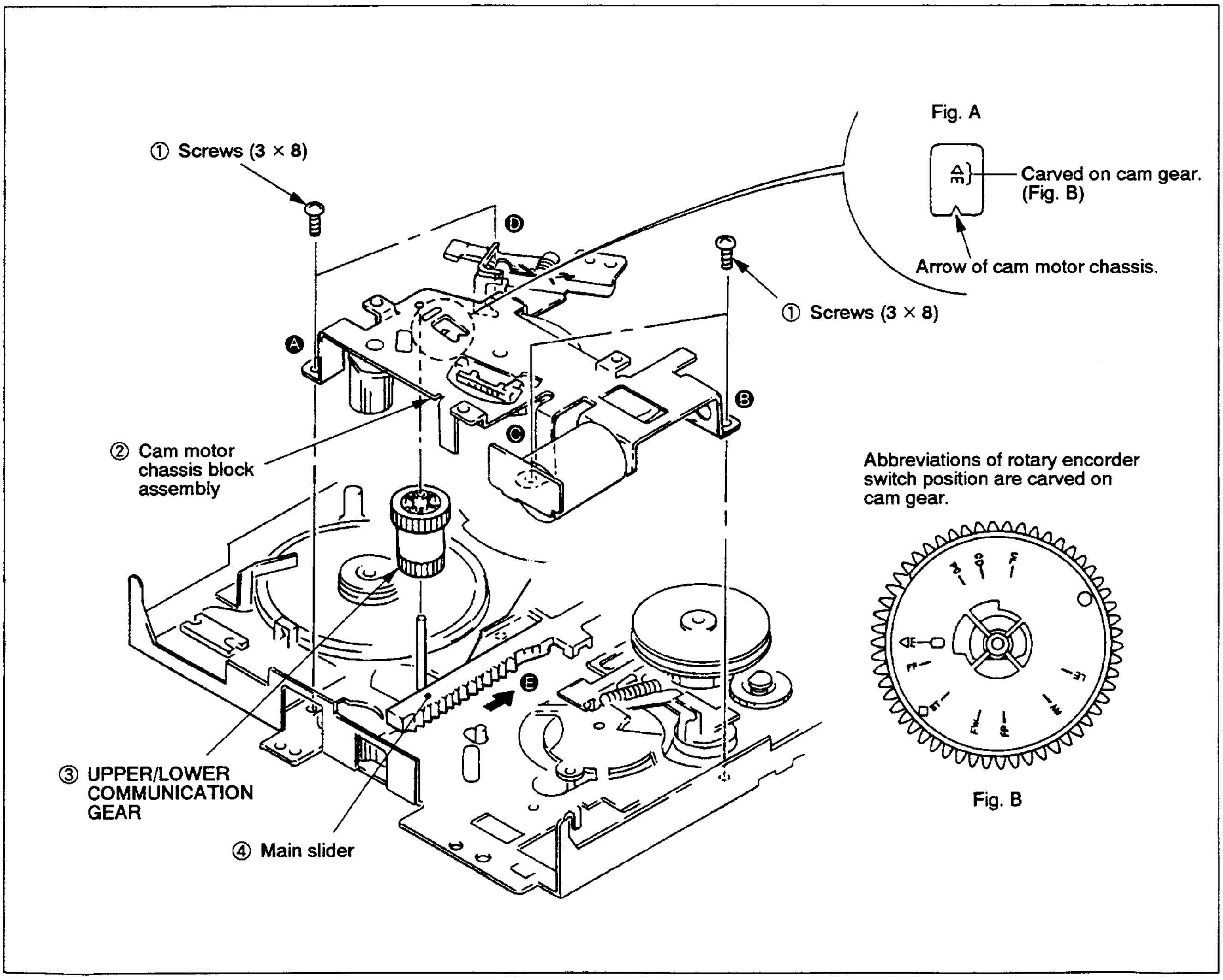

① Screws (3 × 8)
Ⓓ
Ⓐ
① Screws (3 × 8)
Ⓑ
Ⓒ
② Cam motor chassis block assembly
Ⓔ
③ UPPER/LOWER COMMUNICATION GEAR
④ Main slider
Fig. A
Carved on cam gear. (Fig. B)
Arrow of cam motor chassis.
Abbreviations of rotary encorder switch position are carved on cam gear.
Fig. B

Fig. 3-18

3-17. ROTARY ENCODER SWITCH (Fig. 3-19)

1) Remove timing belt. (Refer to 3-3.)
2) Remove CAP brake assembly. (Refer to 3-4.)
3) Remove cam motor chassis block assembly (Refer to 3-15.) and turn upside on the bottom.
4) Remove stopper washer (2) ① to pull out worm wheel ②.
5) Remove stopper washer (2) ③ to pull out cam gear ④.
6) Pull out FL driving gear ⑤ and rotary encoder switch ⑥.

[Note on Mounting]

- Apply FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portions. (Fig. 3-19, A)
- Adjust the hole 🅐 to the hole on cam motor chassis. (Fig. B)
- Adjust the holes 🅑 and 🅒 to the hole on cam motor chassis. (Fig. C)

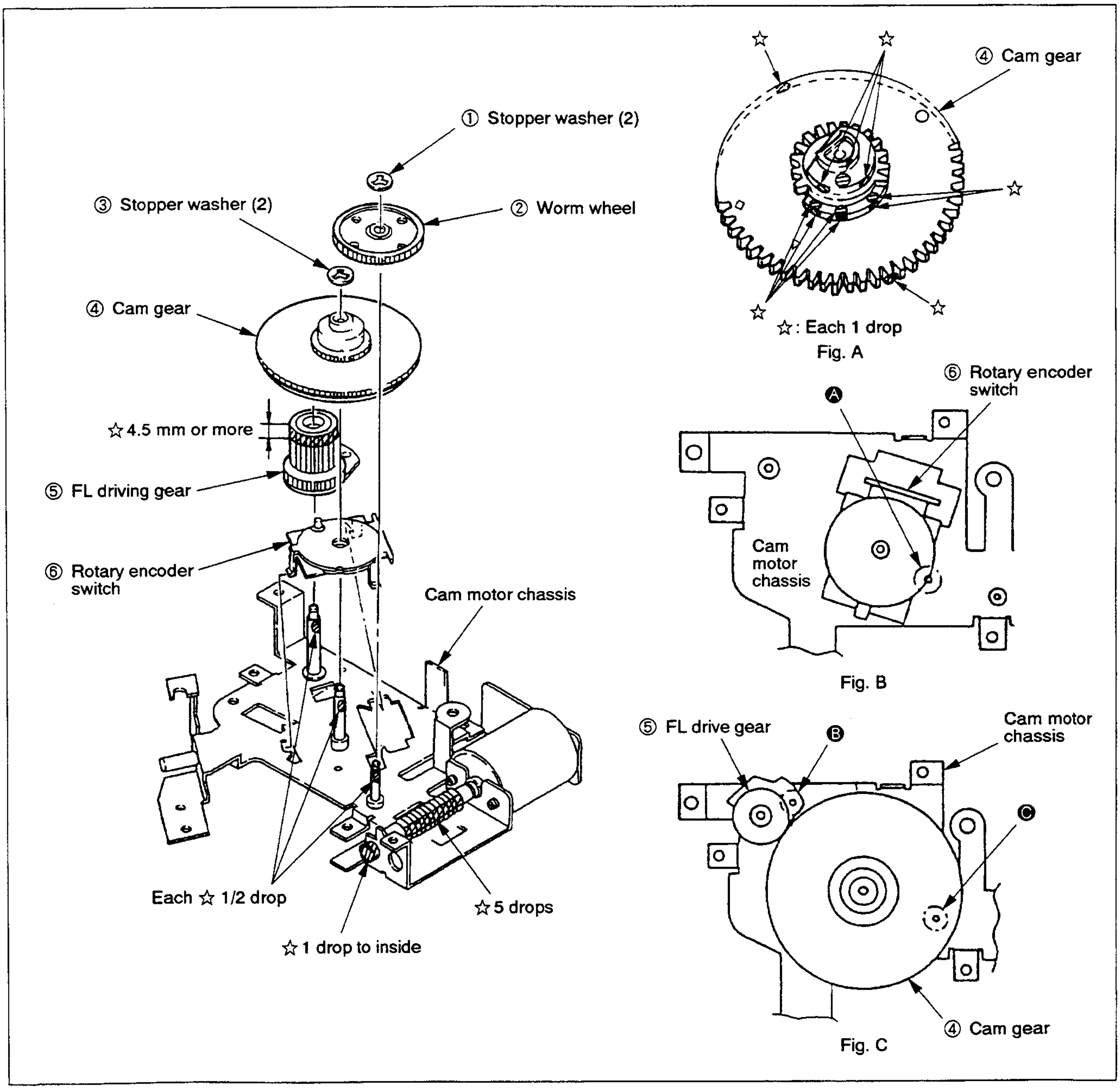

① Stopper washer (2)
② Worm wheel
③ Stopper washer (2)
④ Cam gear
☆4.5 mm or more
⑤ FL driving gear
⑥ Rotary encoder switch
Cam motor chassis
Each ☆ 1/2 drop
☆5 drops
☆1 drop to inside
☆
④ Cam gear
☆: Each 1 drop
Fig. A
⑥ Rotary encoder switch
🅐
Cam motor chassis
Fig. B
⑤ FL drive gear
🅑
Cam motor chassis
🅒
④ Cam gear
Fig. C

Fig. 3-19

3-18. MAIN SLIDER (Fig. 3-20)

1) Remove timing belt. (Refer to 3-3.)
2) Remove CAP brake assembly. (Refer to 3-4.)
3) Remove cam motor chassis block assembly. (Refer to 3-16.)
4) Remove screw ① to remove retainer ②.
5) Pull out main slider ③.

[Note on Mounting]

- Apply FLOIL SG-055G (Jig Ref. No. J-12) as shown in Fig. A.
- At the last, slide main slider fully in the arrow Ⓐ direction.

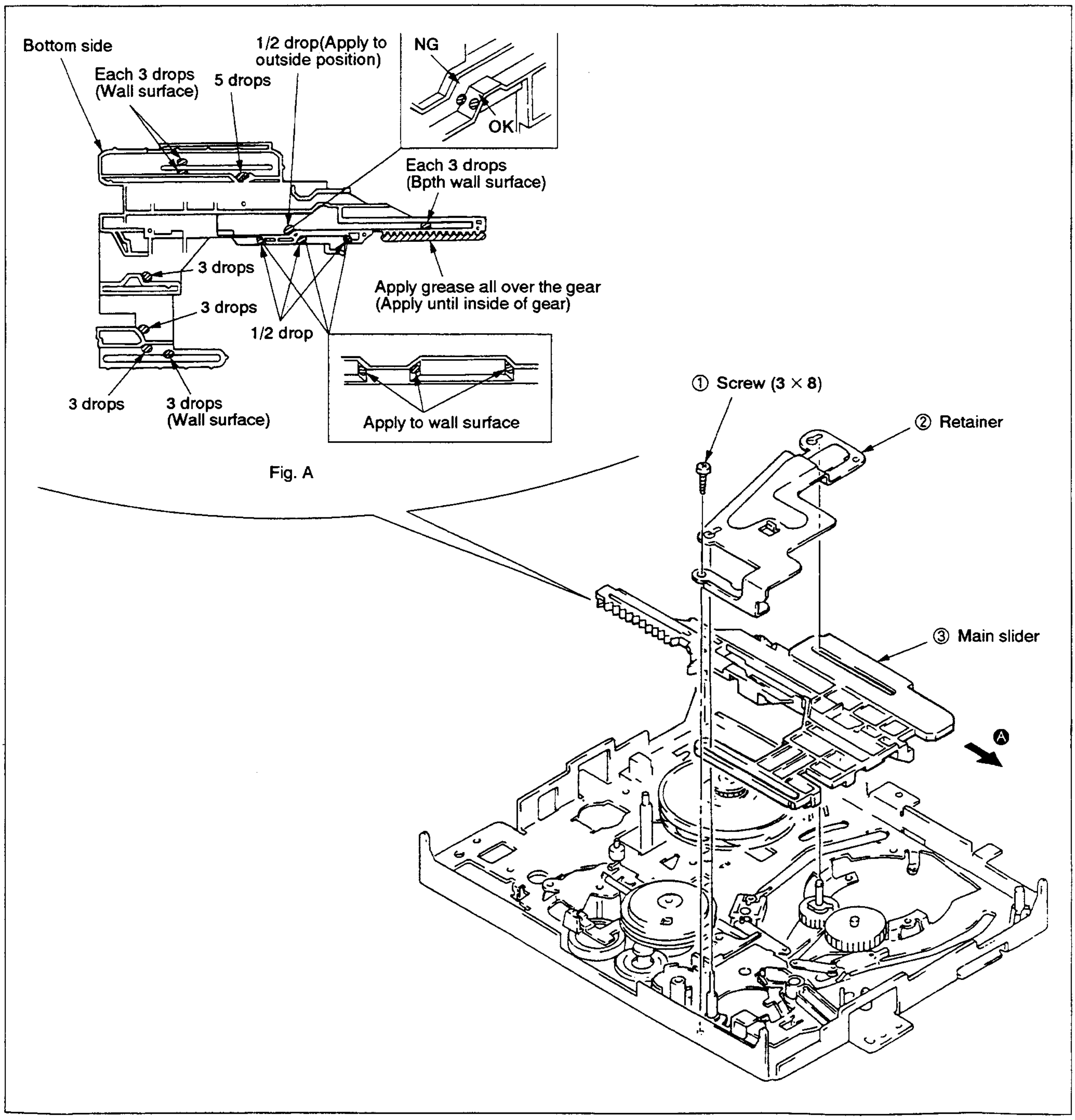

Bottom side
Each 3 drops (Wall surface)
5 drops
1/2 drop(Apply to outside position)
NG
OK
Each 3 drops (Bpth wall surface)
3 drops
3 drops
1/2 drop
Apply grease all over the gear (Apply until inside of gear)
3 drops
3 drops (Wall surface)
Apply to wall surface
Fig. A
① Screw (3 × 8)
② Retainer
③ Main slider
Ⓐ

Fig. 3-20

3-19. SHUTTLE T BLOCK AND LOADING GEAR T BLOCK ASSEMBLIES (Fig. 3-21)

1) Remove timing belt. (Refer to 3-3.)
2) Remove CAP brake assembly. (Refer to 3-4.)
3) Remove cam motor chassis block assembly. (Refer to 3-16.)
4) Remove main slider. (Refer to 3-18.)
5) Remove screw ① to remove loading leaf (T) spring ② and shuttle T block assembly ③.
6) Pull out loading gear T block assembly ④.

[Note on Mounting]

- Adjust the phase 🅐 between loading gear (T) and loading gear (S). (Fig. A)
- Keep clean the surface contacts tape of shuttle T block assembly ③.

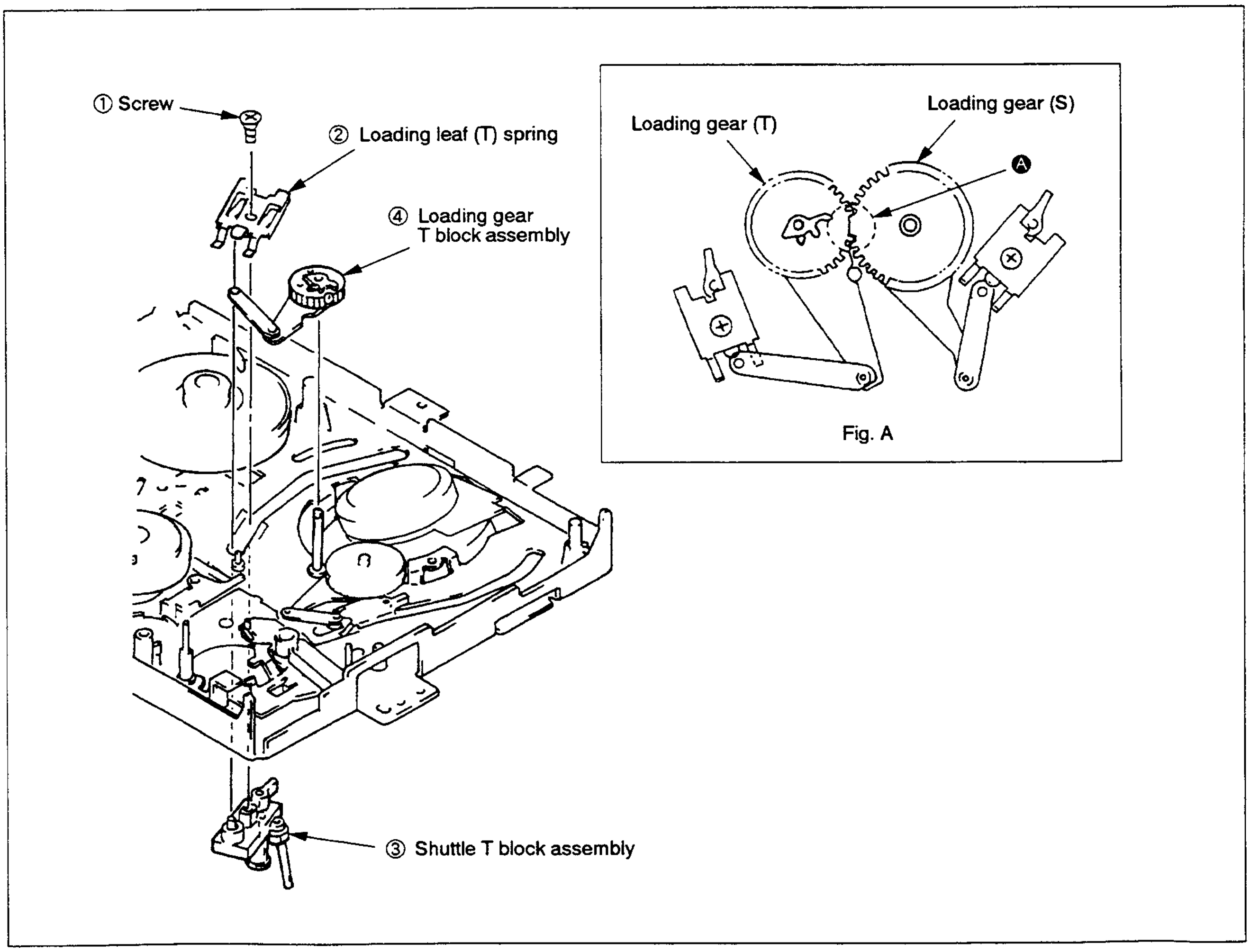

① Screw
② Loading leaf (T) spring
④ Loading gear T block assembly
③ Shuttle T block assembly
Loading gear (T)
Loading gear (S)
🅐
Fig. A

Fig. 3-21

3-20. SHUTTLE S BLOCK AND LOADING GEAR S BLOCK ASSEMBLIES (Fig. 3-22)

1) Remove timing belt. (Refer to 3-3.)
2) Remove CAP brake assembly. (Refer to 3-4.)
3) Remove cam motor chassis block assembly. (Refer to 3-16.)
4) Remove main slider. (Refer to 3-15.)
5) Remove screw ① to remove loading leaf (S) spring ② and shuttle S block assembly ③.
6) Pull out loading gear S block assembly ④.

[Note on Mounting]

- Adjust the phase Ⓐ between loading gear (S) and loading gear (S). (Fig. A)
- Keep clean the surface contacts tape of shuttle S block assembly ③.

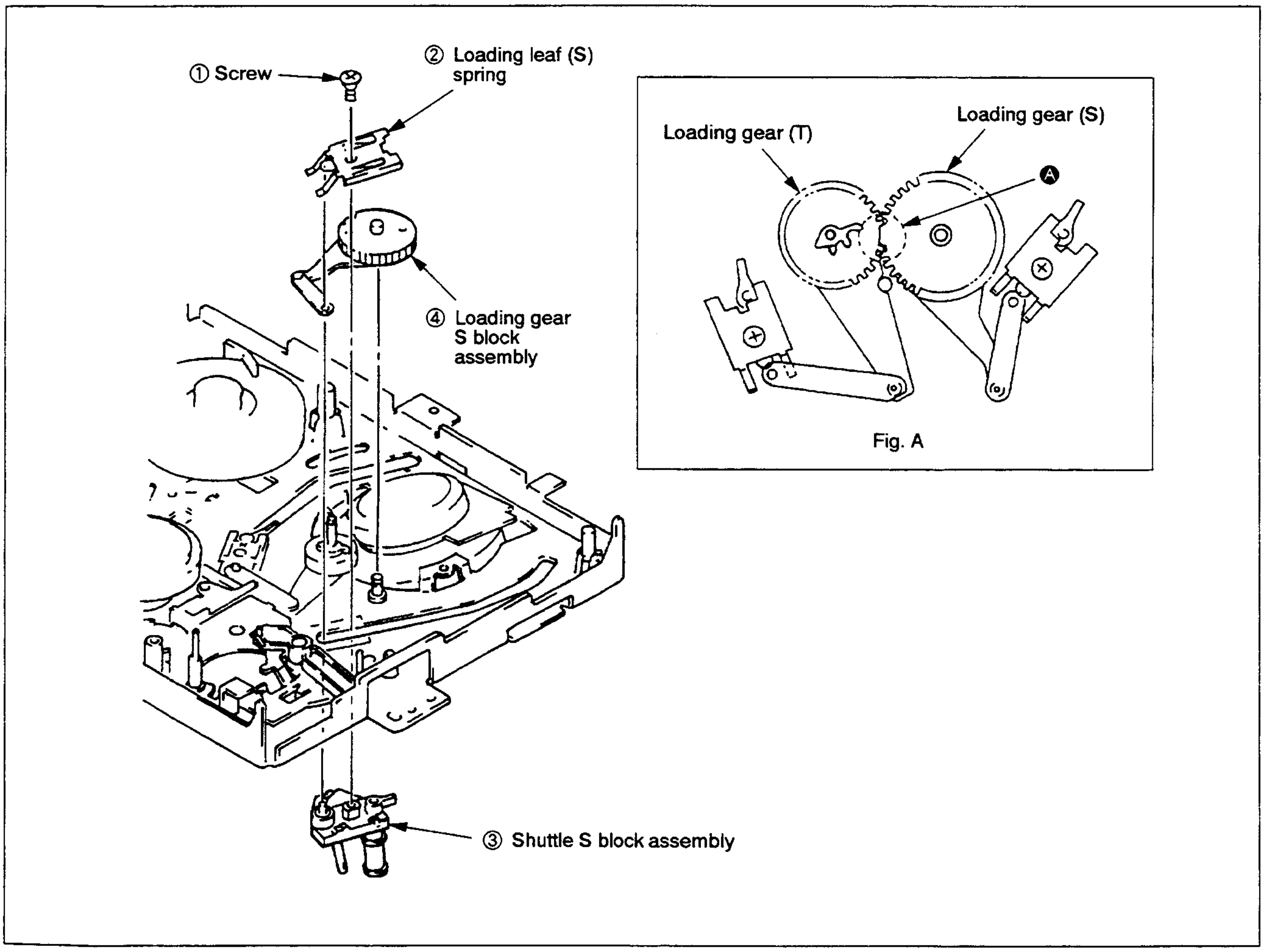

① Screw
② Loading leaf (S) spring
④ Loading gear S block assembly
③ Shuttle S block assembly
Loading gear (T)
Loading gear (S)
Ⓐ
Fig. A

Fig. 3-22

3-21. REEL TABLE (S) ASSEMBLY (Fig. 3-23)

1) Remove tension spring ① from the chassis side.
2) Remove stopper washer (2) ② to pull out soft brake (S) ③.
3) Move TG1 band ④ over the reel table.
4) Remove stopper washer (2) ⑤.
5) While pressing main brake S assembly ⑥, pull out reel table (S) assembly ⑦.

[Note on Mounting]

- Apply one drop of Diamond Oil NT-68 (Jig Ref. No. J-13) to ☆ marked portion before mounting reel table (S) assembly ⑥. (Fig. A)
- Don't touch the hatched portion on reel table (S) assembly ⑥ with bare hand.

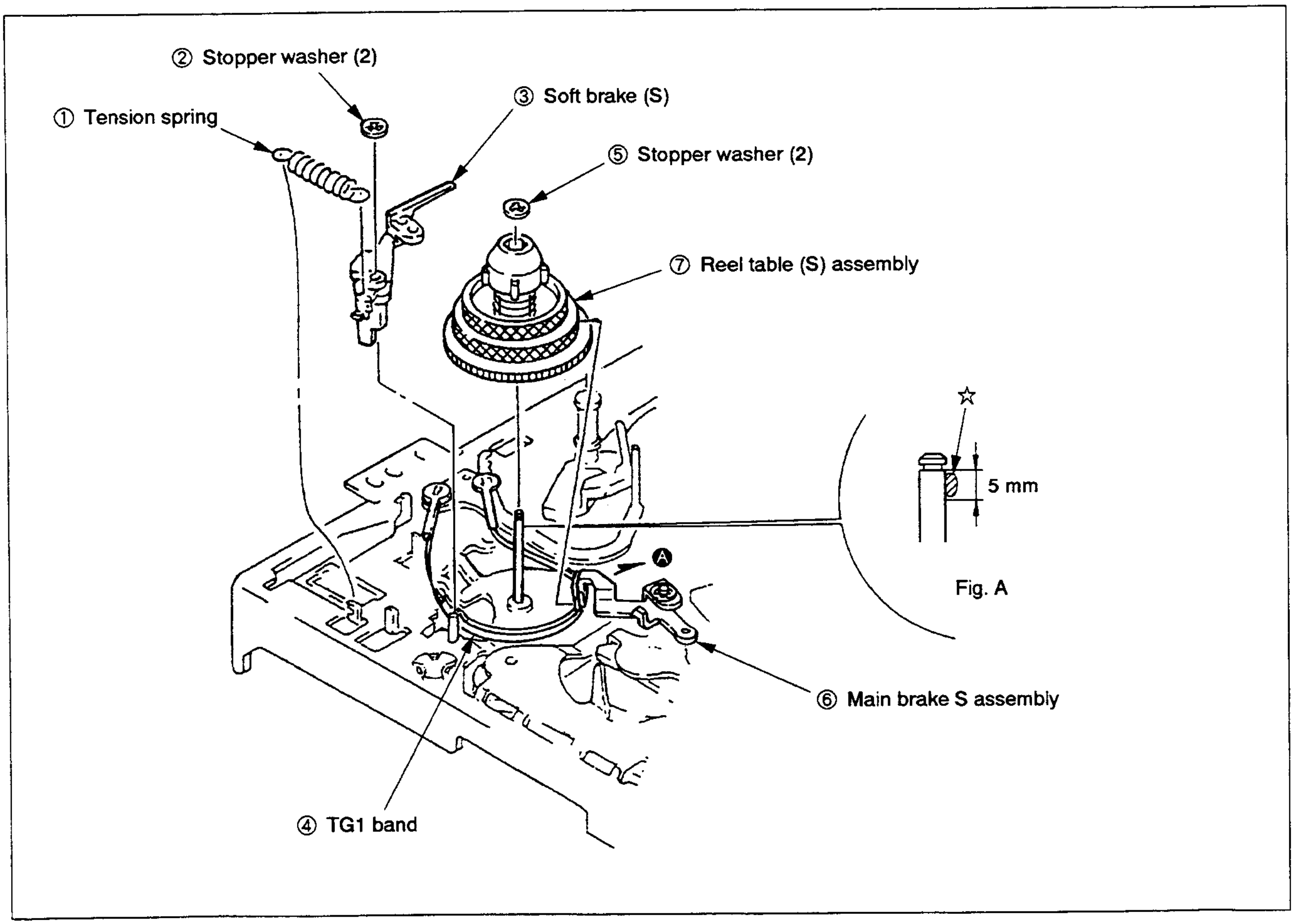

② Stopper washer (2)
③ Soft brake (S)
① Tension spring
⑤ Stopper washer (2)
⑦ Reel table (S) assembly
☆
5 mm
A
Fig. A
⑥ Main brake S assembly
④ TG1 band

Fig. 3-23

3-22. TG1 ASSEMBLY (Fig. 3-24)

1) Set the mechanism to the loading-end condition referring to 1-1. (Cam gear indicates "LE". (Refer to Fig. A and B of Fig. 3-18.))
2) Remove tension spring ① in the order Ⓐ to Ⓑ.
3) Remove stopper washer (2) ② to pull out TG1 assembly ③.

[Note on Mounting]

- Apply one drop of Diamond Oil NT-68 (Jig Ref. No. J-13) to ☆ marked portion.
- Keep clean the felt side of TG1 assembly.

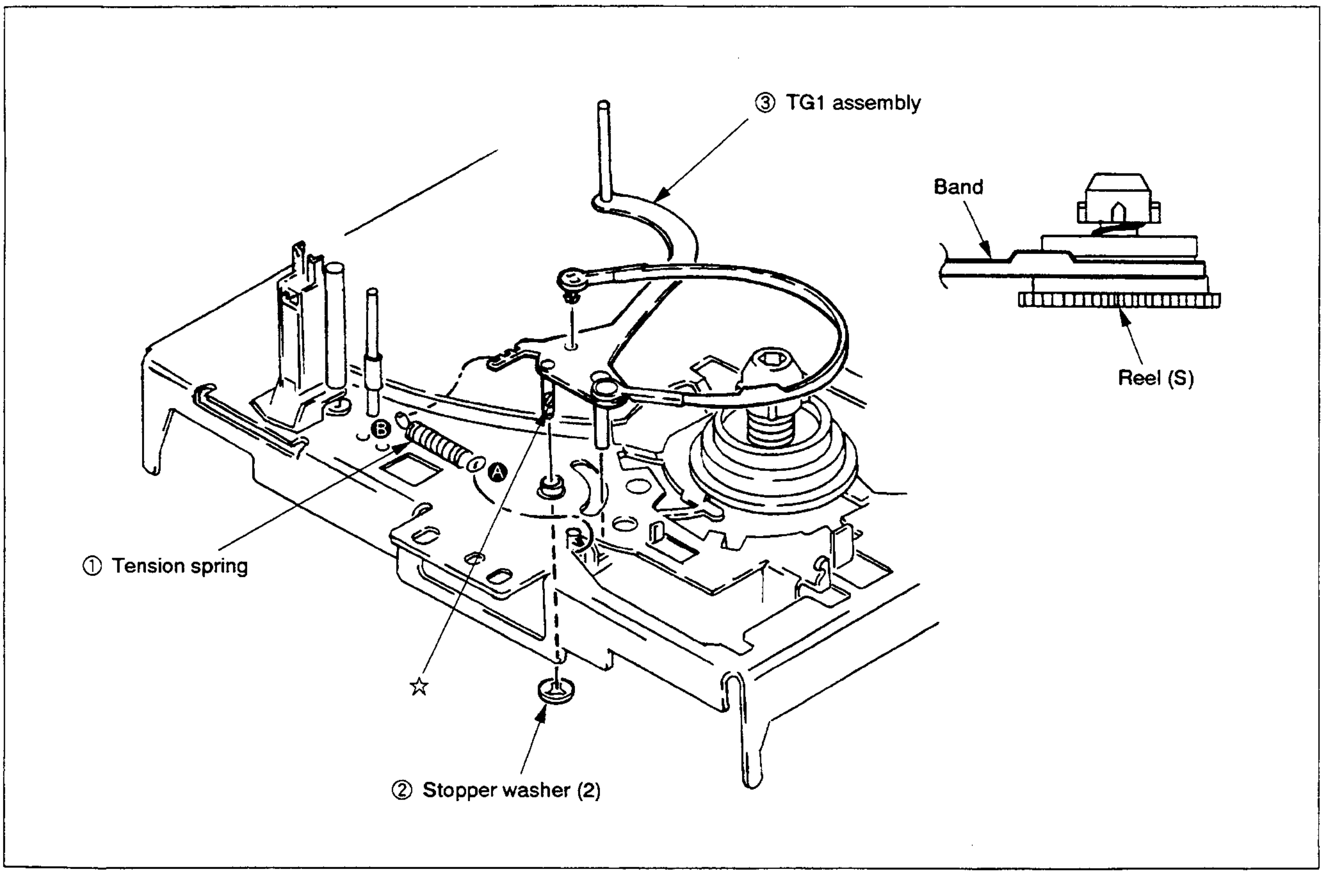

③ TG1 assembly
Band
Reel (S)
Ⓑ
Ⓐ
① Tension spring
☆
② Stopper washer (2)

Fig. 3-24

3-23. S WINDING BLOCK ASSEMBLY (Fig. 3-25)

1) Remove timing belt. (Refer to 3-3.)
2) Remove CAP brake assembly. (Refer to 3-4.)
3) Remove cam motor chassis block assembly. (Refer to 3-16.)
4) Remove main slider. (Refer to 3-18.)
5) Remove stopper washer (2) ① to pull out S winding block assembly ②.
6) Remove torsion spring ③.

[Note on Mounting]

- At the last, hang torsion spring ② to the position Ⓐ.
- Apply FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portions.

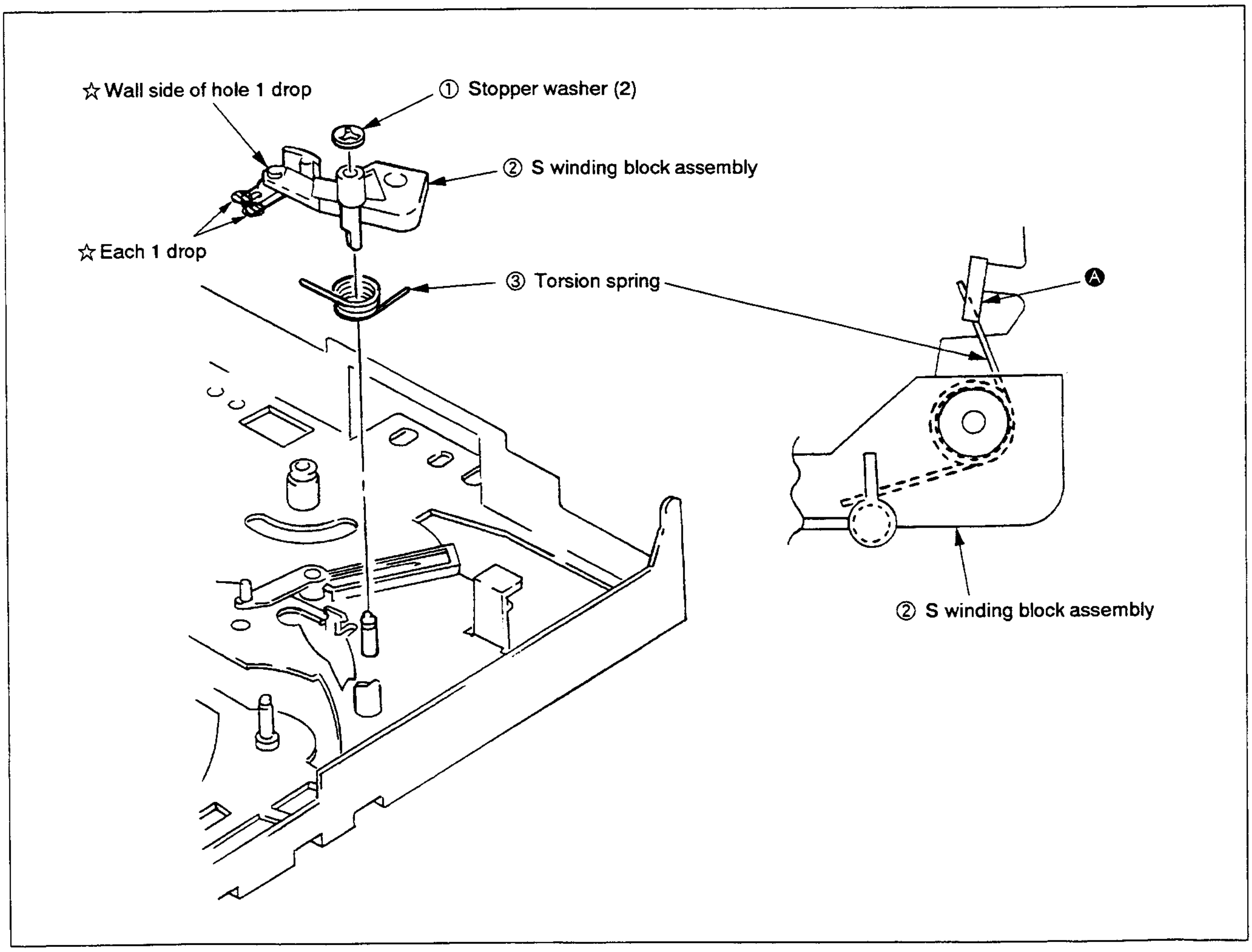

☆Wall side of hole 1 drop
① Stopper washer (2)
② S winding block assembly
☆Each 1 drop
③ Torsion spring
Ⓐ
② S winding block assembly

Fig. 3-25

3-24. TRIGGER LEVER AND RKB BLOCK ASSEMBLIES (Fig. 3-26)

1) Remove timing belt. (Refer to 3-3.)
2) Remove CAP brake assembly. (Refer to 3-4.)
3) Remove cam motor chassis block assembly. (Refer to 3-16.)
4) Remove main slider. (Refer to 3-18.)
5) Remove tension spring ① in the order 🅐 to 🅑 to remove trigger lever assembly ②.
6) Remove screws (3 × 8) ③ to remove RKB block assembly ④.

[Note on Mounting]

- Apply FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portions on trigger lever assembly. (Fig. A)

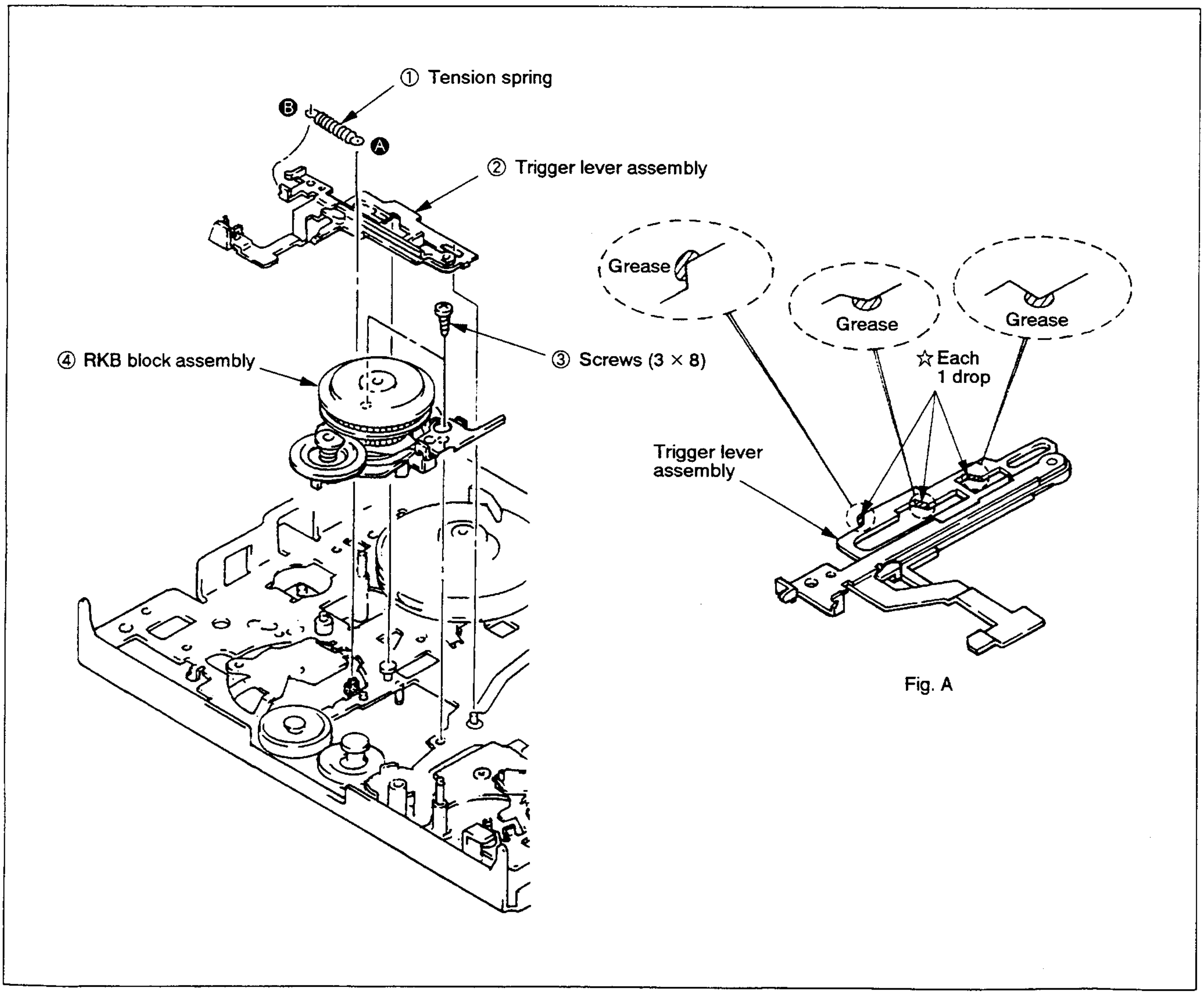

① Tension spring
🅑
🅐
② Trigger lever assembly
④ RKB block assembly
③ Screws (3 × 8)
Grease
Grease
Grease
☆Each 1 drop
Trigger lever assembly
Fig. A

Fig. 3-26

4. ADJUSTMENT

4-1. TAPE PATH ADJUSTMENT

The "Tape path" refers to the route of the tape from the supply reel disk to the take-up reel disc via the video heads.

Each component part of the tape transport system particularly the surface of parts which make direct contact with the tape must always be kept clean, free of dust, oil, scratches and so forth.

The tape path system is factory preadjusted, when parts of the tape transport system are replaced, be sure to make the required adjustments as precisely as possible in order to ensure stable tape transport.

4-1-1. TENSION REGULATOR (TG1) POSITION/ TENSION ADJUSTMENT (Fig. 4-1)

Purpose: stabilizes contact of the video head and the tape to maintain the tension of the tape so that it feeds at a constant level.

• Position adjustment

Mode	Treading is completed without a cassette loaded
Adjustment locations	Eccentric pin of TG1 band assembly

[Adjustment Method]

1) Allow the unit to go through the threading procedure without a cassette loaded.
2) Set the unit to play back, then turn the eccentric pin so that the tip of tension arm goes to the left side line carved on the mechanical chassis. (Fig. A)
3) After adjustment, go through the loading procedure once more without a cassette loaded, then check the position of the tension arm.

• Tension adjustment

Mode	Playback
Measuring instrument/tool	Torque cassete
Adjustment locations	Position for hooking the tension spring
Specified value	36 to 44 g•cm

[Adjustment Method]

1) Playback the torque cassette.
2) Check that the center value deviation reading on the torque cassette meets with the standards.
3) When the reading is higher than the standards: Move the spring toward direction Ⓐ.
When the reading is less than the standards: Move the spring toward direction Ⓑ.

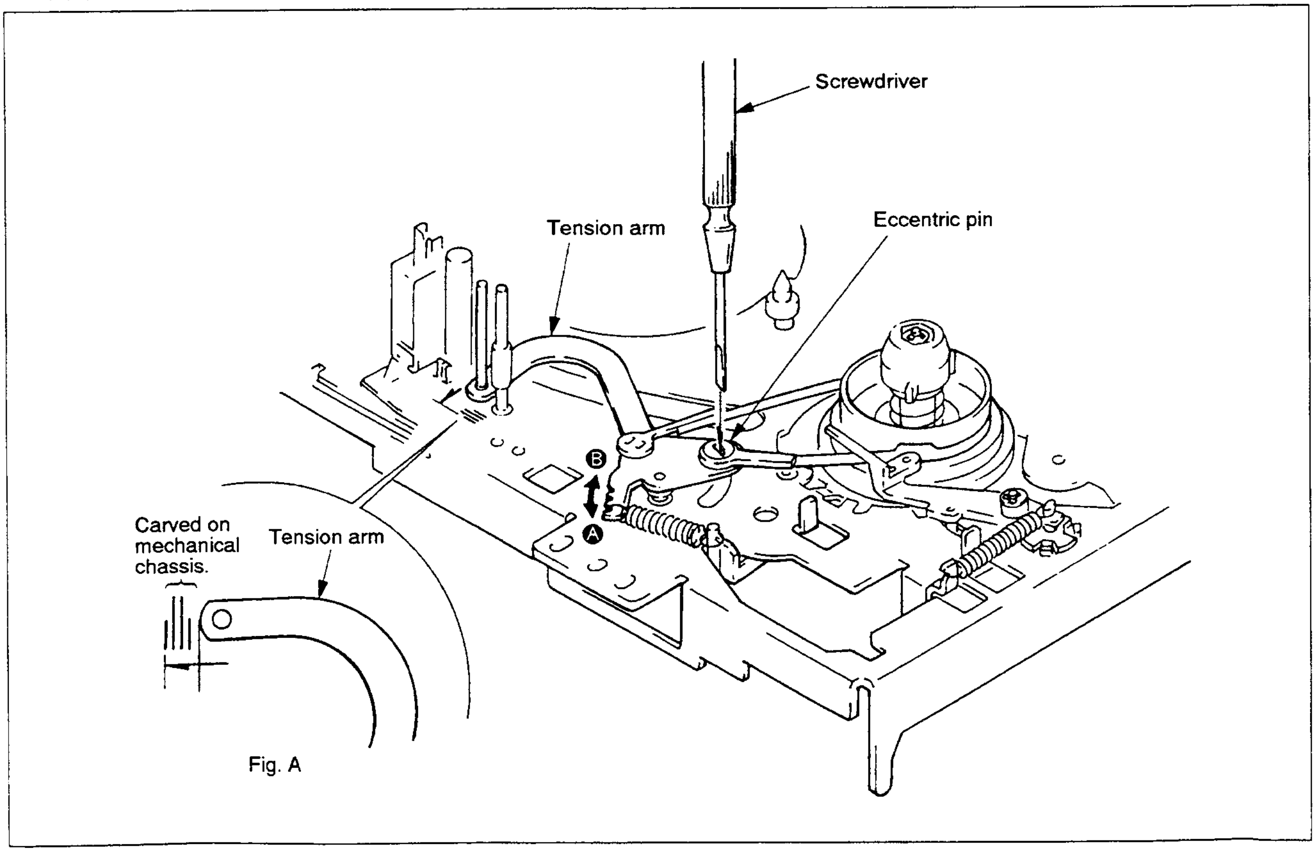


Fig. 4-1

4-1-2. TG8 GUIDE ROLLER HEIGHT ADJUSTMENT (Fig. 4-2)

Mode	Playback
Jig	Blank tape
Adjustment locations	Guide roller height adjustment screw
Specified value	0 to 0.1 mm

Procedure:

1) Set the tape, during CUE playing back, check the height from lower flange of TG7 to the running tape. (Fig. A)
2) During REV playing back, check the height from lower flange of TG7 to the running tape. (Fig. B)
3) When the difference between items 1) and 2) doesn't go to specified value, adjust by turning TG8 guide roller height adjustment screw.
4) Check the tape is creased or not between the capstan and TG8, adjust with TG8 guide roller height adjustment screw so that the tape is not creased during normal playback, CUE and REV.

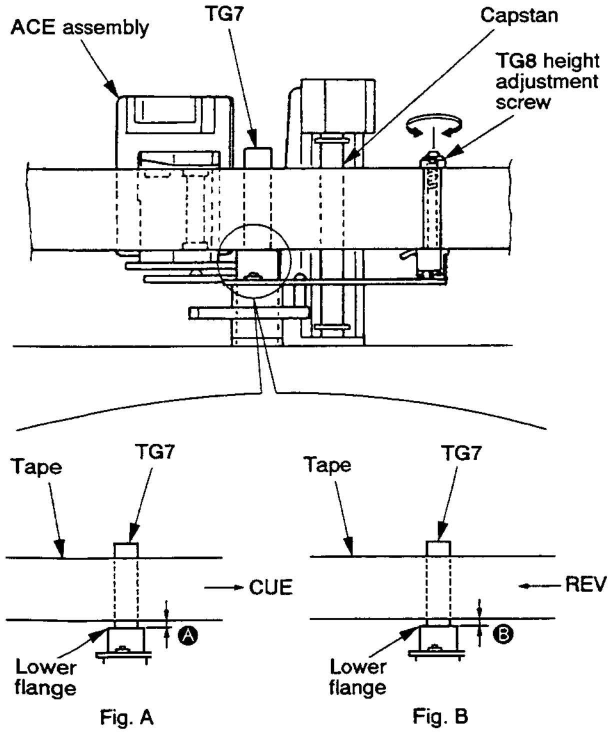

ACE assembly
TG7
Capstan
TG8 height adjustment screw
Tape
TG7
CUE
Ⓐ
Lower flange
Tape
TG7
REV
Ⓑ
Lower flange

Fig. A

Fig. B

Difference between Ⓐ and Ⓑ = 0 to 0.1 mm

Fig. 4-2

4-1-3. HEIGHT ADJUSTMENT OF GUIDE ROLLERS NO. 3 AND NO. 6 (Fig. 4-3)

Mode	Playback
Signal	Alignment tape
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SW P pin for RF PC board check.
Adjustment locations	Guide roller height adjuster screw

[Adjustment Method]

1) Tracking (playback): Turn off the auto tracking, then press the tracking buttons ▽ and △ simultaneously to set the tracking at the center position.
(If adjustment is made after the drum is replaced, the tracking must be set at the max. RF output position.)
2) Height adjuster screw: Even out the RF output waveforms.
3) Press the tracking buttons (playback), ▽ and △ alternately.
4) Check that RF output drops the same amount at the front and rear edges.

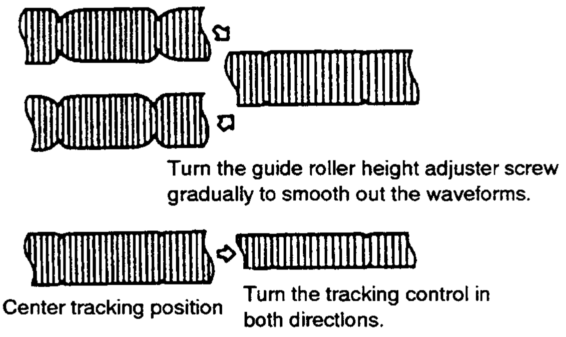

Turn the guide roller height adjuster screw gradually to smooth out the waveforms.
Center tracking position
Turn the tracking control in both directions.

Fig. 4-3

4-1-4. ACE HEAD ASSEMBLY ADJUSTMENT (ROUGH ADJUSTMENT) (Figs. 4-4 and 4-5)

Purpose: Allows the tape to make even contact with the head for recording and playback of the specified track.

Mode	Playback
Tool	Blank tape
Adjustment locations	Height adjuster nut, Tilt adjuster screw

[Adjustment Method]

1) Mount the ACE head assembly. At this time, adjust the height so that the height of guide flange No. 7 matches the level of the lower edge of the control head.
2) Remove the adjustment tool and load a new tape, then set the unit for playback.
3) Check that the tape does not curl or rise up noticeably near the ACE head.
4) If the tape curls up or rises noticeably, readjust the tilt adjuster screw, the azimuth adjuster screw and the height adjuster nut.
(The height of the ACE head should be adjusted so that the lower edge of the tape is approx. 0.1 to 0.15 mm from the control head.)
5) Perform precision adjustment.

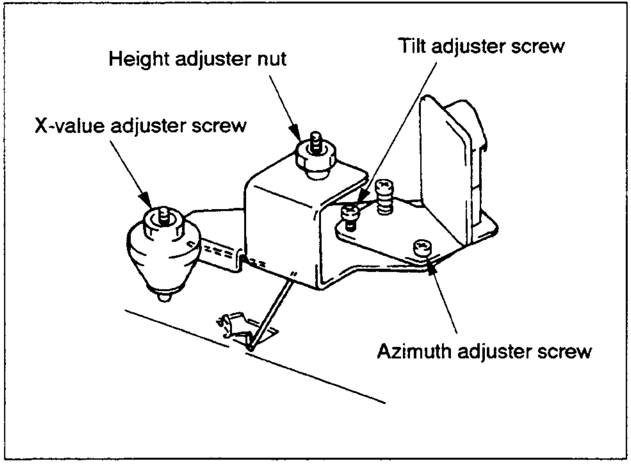

Height adjuster nut
Tilt adjuster screw
X-value adjuster screw
Azimuth adjuster screw

Fig. 4-4

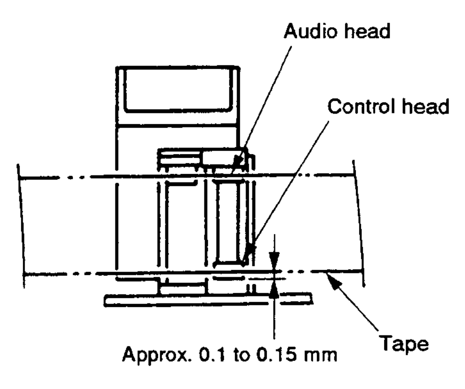

Audio head
Control head
Approx. 0.1 to 0.15 mm
Tape

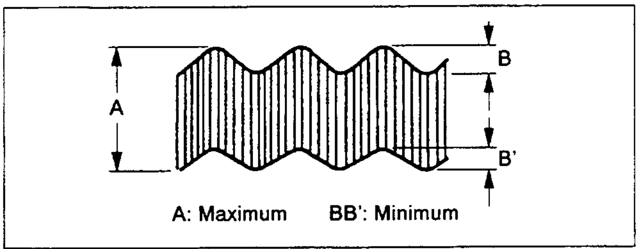
Fig. 4-5

4-1-5. ACE HEAD ASSEMBLY ADJUSTMENT (PRECISION ADJUSTMENT)

Mode	Playback
Signal	Alignment tape (1kHz track)
Measuring instrument	Oscilloscope
Measuring point	Audio output terminal
Adjustment locations	Azimuth adjuster screw, Height adjuster nut, Tilt adjuster screw

[Adjustment Method]

1) Adjust the tilt adjuster screw in the FWD or REV mode so that the lower flange of guide No. 7 does not curl up or rise.
2) Alternately adjust the azimuth adjuster screw, the height adjuster nut, and the tilt adjuster screw to maintain even audio output at maximum with minimum deviation.



A
B
B'
A: Maximum
BB': Minimum

Fig. 4-6

4-1-6. X-VALUE ADJUSTMENT

Purpose: To obtain compatibility with other VTR

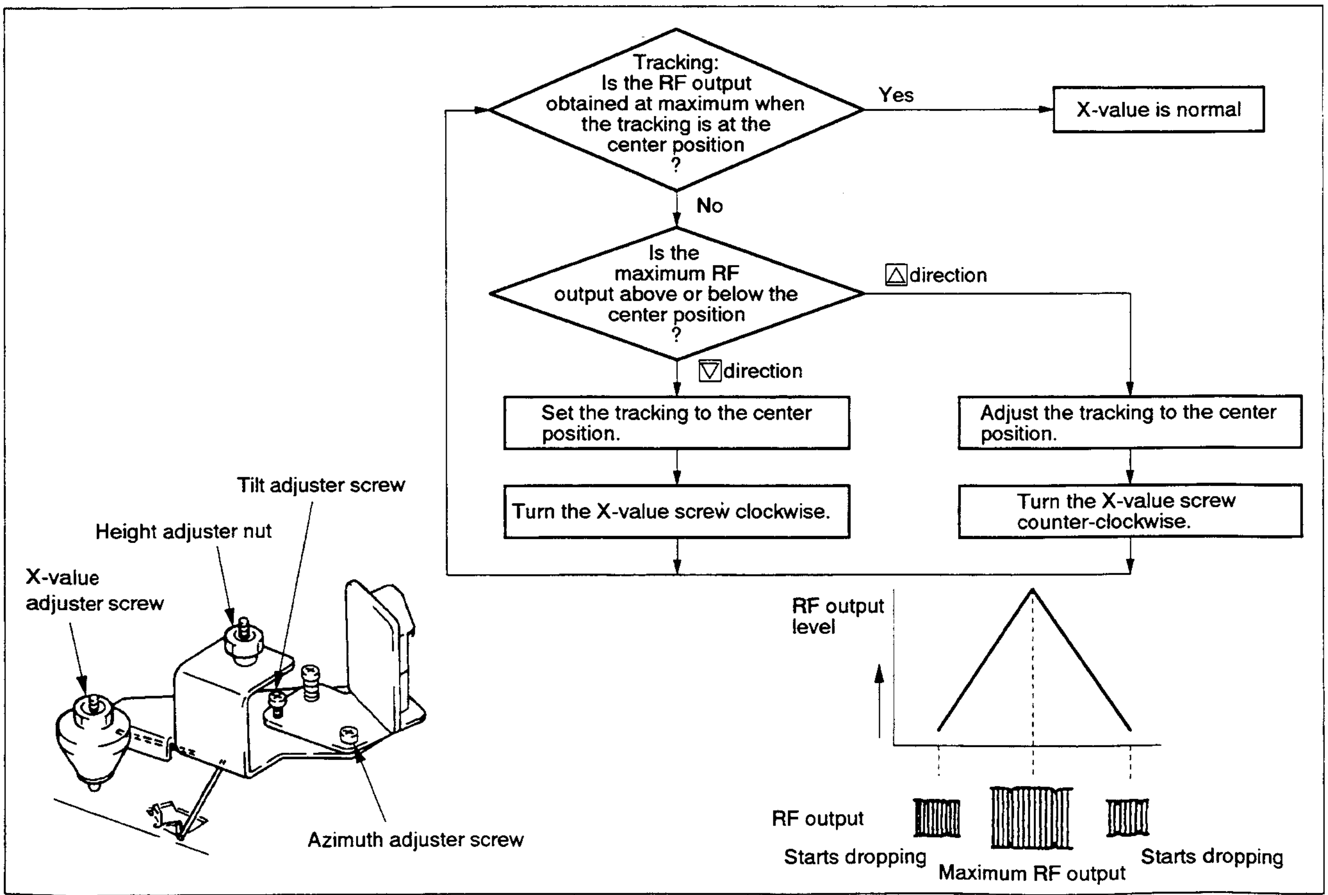
Precaution: Be sure to perform the preset tracking adjustment before perform this adjustment. (Refer to the Service Guide.)
Turn off the auto tracking and set the VTR for manual tracking mode.

Mode	Playback
Signal	Alignment tape
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SW P pin for RF PC board check.
Adjustment locations	X-value adjuster screw

[Adjustment Method]

- **Adjustment by Hi-Fi alignment tape (NTSC only)**

  When the tracking is set at the center position (by pressing the ▽ and △ keys simultaneously), adjust the RF output to maximum.



Tracking: Is the RF output obtained at maximum when the tracking is at the center position ?
Yes
X-value is normal
No
Is the maximum RF output above or below the center position ?
△direction
▽direction
Set the tracking to the center position.
Turn the X-value screw clockwise.
Adjust the tracking to the center position.
Turn the X-value screw counter-clockwise.
Tilt adjuster screw
Height adjuster nut
X-value adjuster screw
Azimuth adjuster screw
RF output level
RF output
Starts dropping
Maximum RF output
Starts dropping

Fig. 4-7

- **Adjustment by alignment tape**

  Adjust the X-value adjuster screw so that maximum RF output is obtained and also that the RF output drops to the same position on pressing the respective ▽ and △ buttons while the tracking is set at the center position.

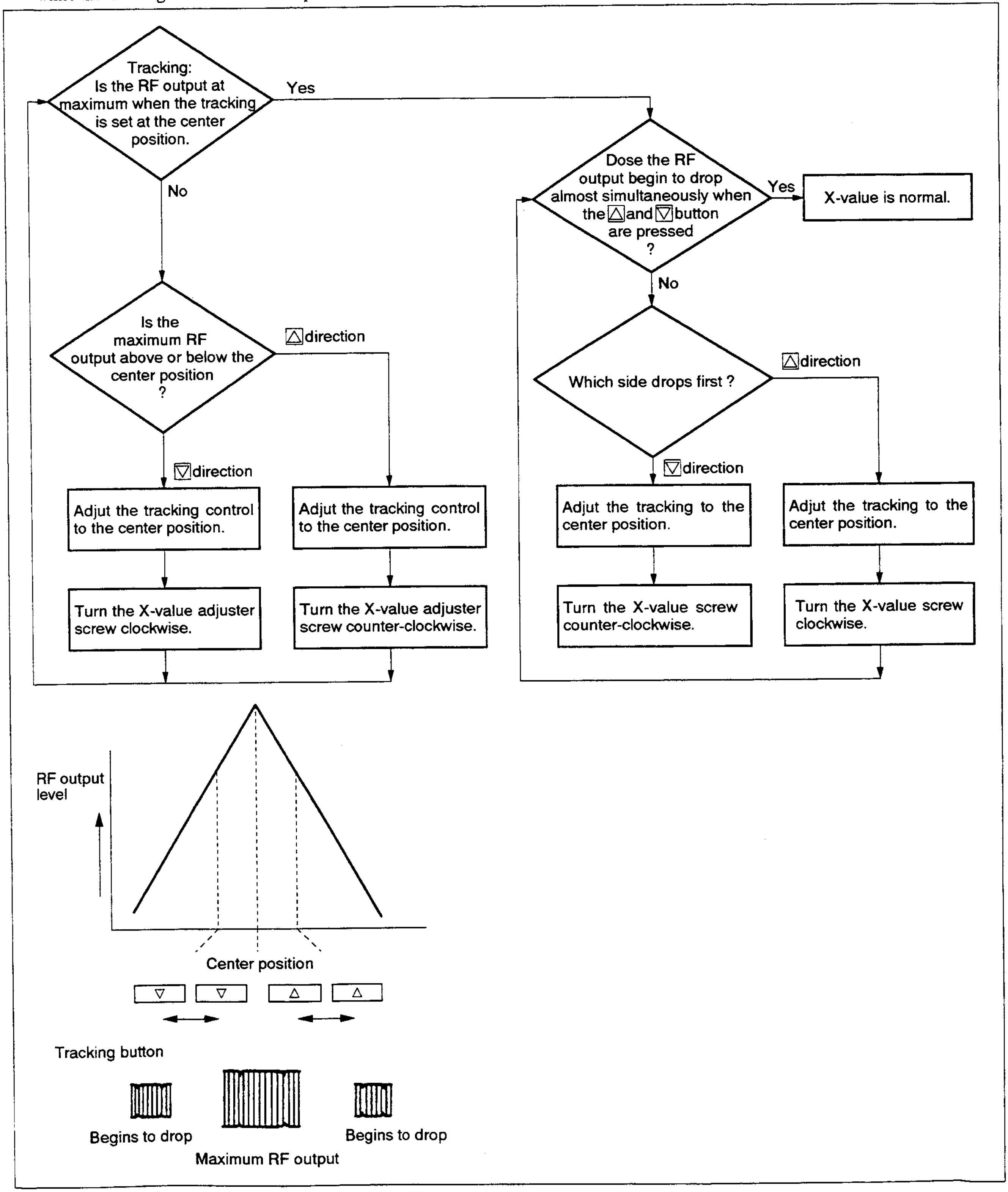

Tracking:
Is the RF output at maximum when the tracking is set at the center position.
Yes
No
Dose the RF output begin to drop almost simultaneously when the △ and ▽ button are pressed ?
Yes
X-value is normal.
No
Is the maximum RF output above or below the center position ?
△ direction
▽ direction
Adjust the tracking control to the center position.
Adjust the tracking control to the center position.
Turn the X-value adjuster screw clockwise.
Turn the X-value adjuster screw counter-clockwise.
Which side drops first ?
△ direction
▽ direction
Adjust the tracking to the center position.
Adjust the tracking to the center position.
Turn the X-value screw counter-clockwise.
Turn the X-value screw clockwise.
RF output level
Center position
▽
▽
△
△
Tracking button
Begins to drop
Maximum RF output
Begins to drop

Fig. 4-8

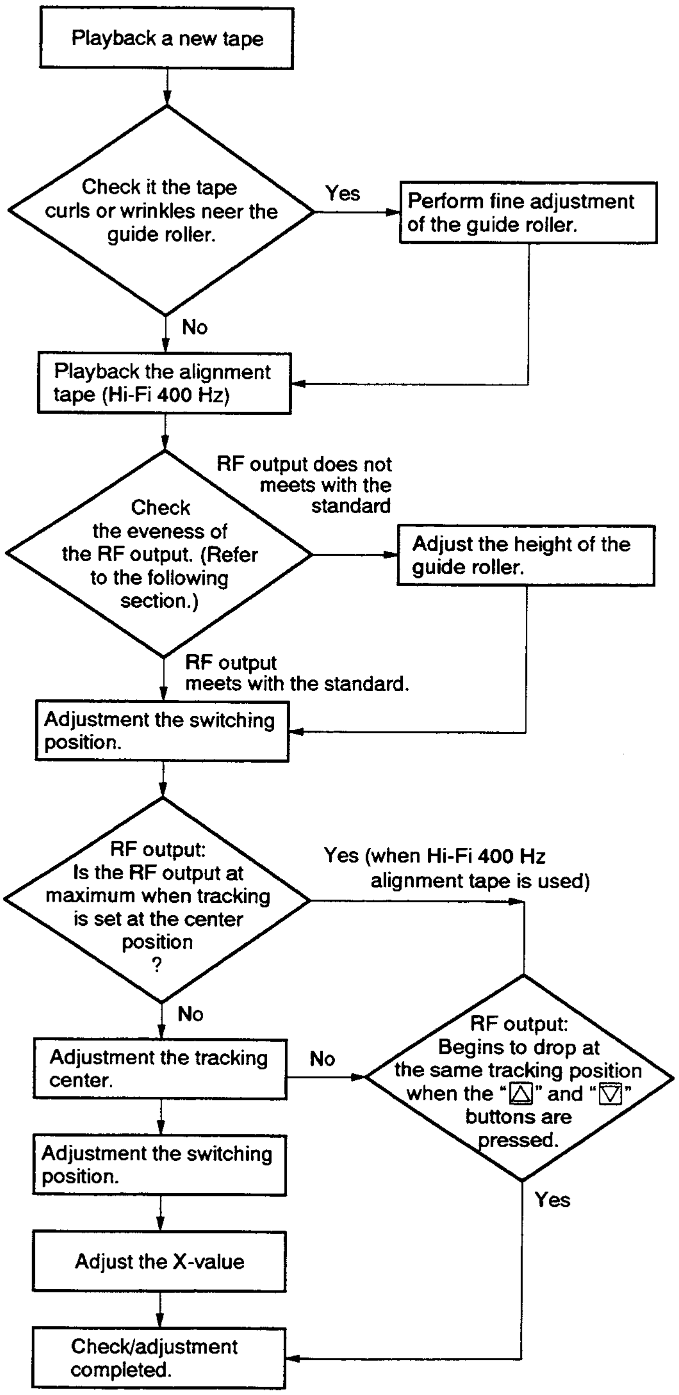
4-1-7. ADJUSTMENTS AFTER REPLACING THE DRUM (VIDEO HEAD)

Purpose: Co-relative height, X-value and other factors of the drum will deviate from those of the guide roller. If the drum is replaced properly, these deviations are extremely small.

Precaution: Turn off the auto tracking and set the manual tracking mode.

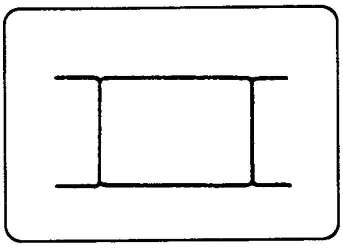
Mode	Playback
Signal	Alignment tape, blank tape
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SW P pin for RF PC board check.
Adjustment locations	Guide roller (refer to 4-1-2, 4-1-3.) Switching position, Tracking preset, SP delay mono-multi (Refer to the Service Manual), X-value. (refer to 4-1-6.)

[Adjustment Method]

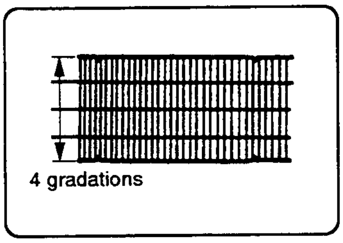

Playback a new tape
Check it the tape curls or wrinkles neer the guide roller.
Yes
Perform fine adjustment of the guide roller.
No
Playback the alignment tape (Hi-Fi 400 Hz)
Check the eveness of the RF output. (Refer to the following section.)
RF output does not meets with the standard
Adjust the height of the guide roller.
RF output meets with the standard.
Adjustment the switching position.
RF output: Is the RF output at maximum when tracking is set at the center position ?
Yes (when Hi-Fi 400 Hz alignment tape is used)
No
Adjustment the tracking center.
No
RF output: Begins to drop at the same tracking position when the "△" and "▽" buttons are pressed.
Yes
Adjustment the switching position.
Adjust the X-value
Check/adjustment completed.

[Checking the evenness and fluctuation of the RF output]

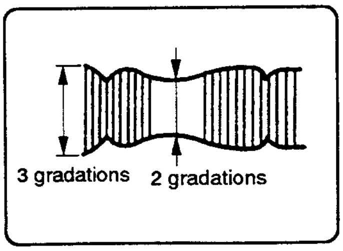
1) Set the RF output to the maximum level using the tracking buttons.



2) Perform fine adjustment of the voltage level range of the oscilloscope, then adjust the RF output deviation to within 4 gradations.



3) Press the tracking buttons and adjust the maximum amplitude of the RF output to within 3 gradations.
4) At this time, check if the minimum amplitude is more than 2 gradations.



5) Check that the RF output fluctuation between minimum and maximum levels is within 13%.

4-1-8. CHECKING THE TENSION AND TORQUE

Purpose: To check that the tension, torque and compression force of the tape take-up section and mobile sections to ensure smooth tape run and achieve standard VTR performance.
If the tape transport is not smooth or problems occur in relation to the tape transport speed, perform the following check.

Mode	Each operation mode without loading a cassette tape. (Refer to section 1-3.)
Measuring instrument	Torque gauge, Torque gauge adaptor

Item	VTR operation mode	Reel to be measured	Measurement value
Main brake torque	Stop	Supply and take-up reels	170 g•cm or more
Review torque	Review	Supply reel	180 ± 30 g•cm (using the torque cassette)
Take-up torque	Playback	Take-up reel	95 ± 25 g•cm (using the torque cassette)
Back tension torque	Playback	Take-up reel	33 to 44 g•cm (using the torque cassette)

[Check Method]

Measure the torque using the torque gauge and torque gauge adaptor with the torque gauge fixed.

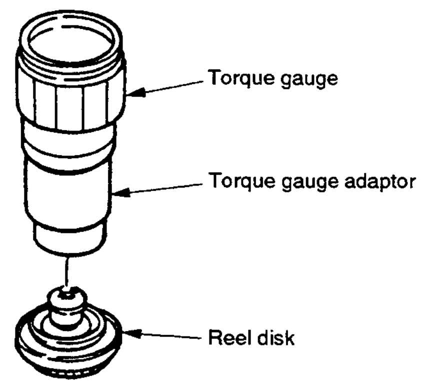


Fig. 4-9

V03056

VHS MECHANICAL ADJUSTMENT MANUAL IV

SONY

SERVICE MANUAL

H MECHANISM

SUPPLEMENT-1

1. How to Use the Mode Selector Ⅱ for Adjusting H Type Mechanism Assembly.
2. Adjusting Mechanism Using New Alignment Tape (KRV-52NE For NTSC).

File this supplement with the VHS mechanical adjustment Ⅳ.

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MICROFILM

1. HOW TO USE THE MODE SELECTOR Ⅱ FOR ADJUSTING H TYPE MECHANISM ASSEMBLY

1-1. OUTLINE

To activate the VHS system H type mechanism assembly using mode selector Ⅱ (J-6082-282-A), use connector conversion jig (J-6090-052-A). By using the connector conversion jig, the following operations are possible.

- Loading and unloading action by the loading motor
- Reading of the current setting of the mode switch
- Normal and reverse rotation of the capstan motor

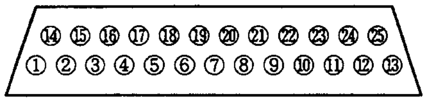
1-2. PREPARATION

1-2-1. ADDITION OF POWER SUPPLY CABLE (Already added Mode Selector Ⅱ also available)

In order to drive the capstan motor, the power +5 V and +12 V are supplied from the Mode Selector Ⅱ. Disassemble the D-SUB connector of the Mode Selector cable, then solder the following three places.

Supplied 3-pin cable	DSUB connector of the mode selector Ⅱ	Voltage
Pin 1 (Red index)	Pin 20	+12 V
Pin 2	Pin 25	GND
Pin 3	Pin 24	+5 V

- Connector pin number assignment of the DSUB connector (From the soldering side)



- When connections are made, check that +5 V and +12 V are available at the 3-pin cable connector.

1-2-2. CHECKING THE SOFTWARE VERSION

Turn on the power of the mode selector II.

If the reading for the software version on the mode selector II is not 1.10 or higher, replace the New ROM (J-6082-314-A).

1-3. CONNECTION

1-3-1. CONNECTION BETWEEN THE CONNECTOR CONVERSION JIG AND THE MODE SELECTOR Ⅱ (See Fig. 1-1)

Insert the connectors of the two 6-pin cables (one is white and the other is black) and the 3-pin cable from the mode selector Ⅱ to the corresponding connectors on the connector conversion jig (J-6090-052-A).

1-3-2. CONNECTION BETWEEN THE CONNECTOR CONVERSION JIG AND THE H TYPE MECHANISM ASSEMBLY

With the power of the mode selector Ⅱ turned off, insert the following three connectors to the corresponding connectors on the H type mechanism assembly.

- 3-pin connector for the loading motor
- 5-pin connector for the mode switch
- 8-pin connector for the capstan motor

Set the speed control for the minimum setting (fully counterclockwise).

1-4. OPERATION

1-4-1. OPERATION OF THE LOADING MOTOR ON THE H TYPE MECHANISM ASSEMBLY

(1) Select the H type mechanism assembly setting on the mode selector Ⅱ.

(2) After this, procedures are the same as those for the previous model types.
For the operating method, see pages 3 to 5 of "8 mm Video Mechanism Manual Ⅵ (TK Mechanism) Supplement-1".
For the loading method, see page 3 of "VHS Mechanical Adjustment Manual Ⅳ (H Mechanism)".

1-4-2. OPERATION OF THE CAPSTAN MOTOR ON THE H TYPE MECHANISM ASSEMBLY

(1) For the loading motor operation under Section 1-4-1, change the mode setting to the FF/REW mode with the mode switch.

(2) Turn the speed control gradually in clockwise direction, and the capstan motor starts rotating. To turn the capstan motor in desired rotating direction, change the FWD/RVS setting of the rotating direction switch.

1-5. PRECAUTIONS

- Turn the speed control only when necessary. Otherwise, hold the speed control turned at fully counterclockwise direction. If the power of the mode selector II is turned on with the speed control turned in clockwise direction, +12V power fails and the power of the mode selector II cannot be turned on.
- Although the connector conversion jig (J-6090-052-A) has rubber feet, do not make a short circuit on the bottom surface of the connector conversion jig via foreign conductive materials.

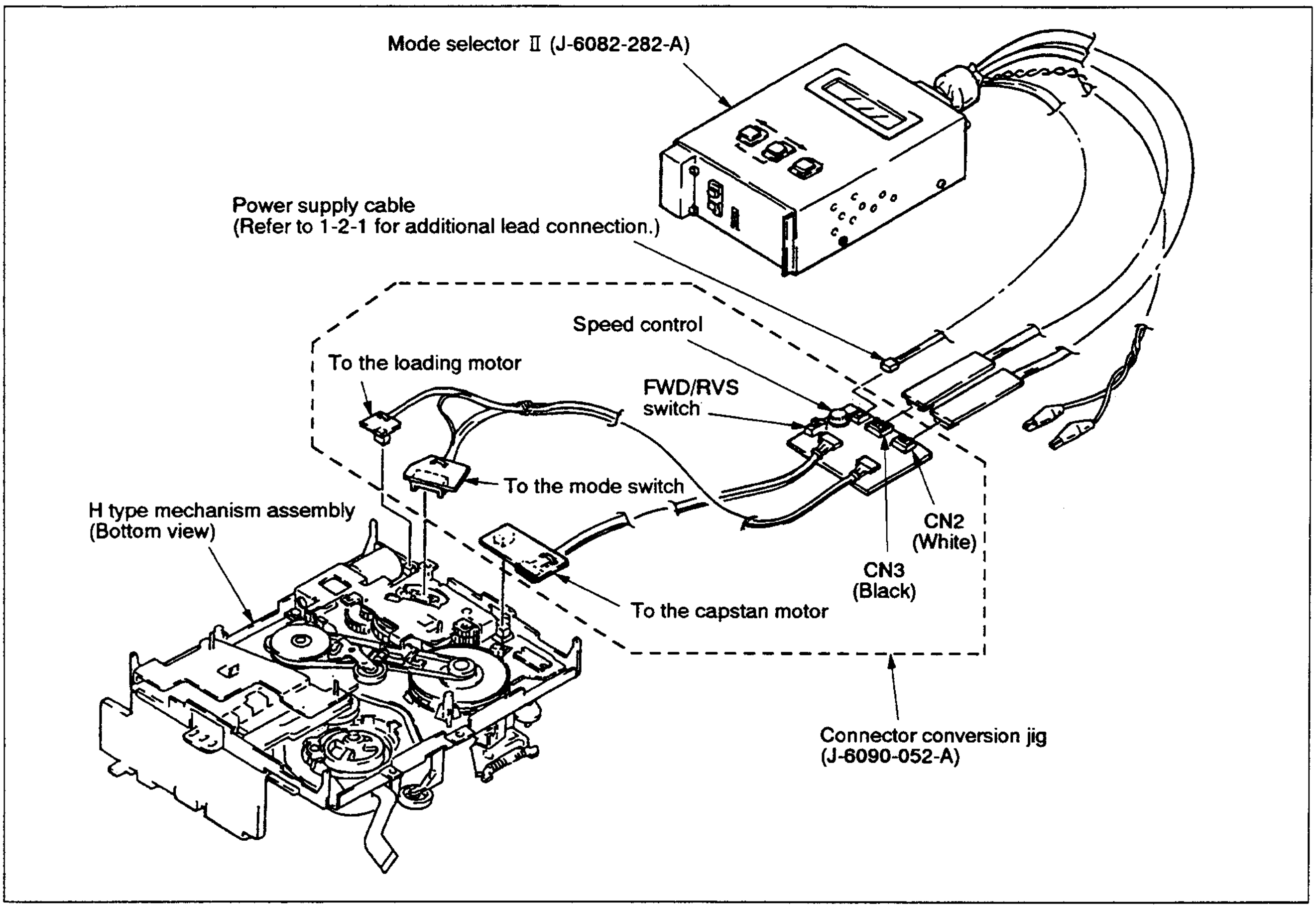

Mode selector Ⅱ (J-6082-282-A)
Power supply cable
(Refer to 1-2-1 for additional lead connection.)
Speed control
To the loading motor
FWD/RVS switch
To the mode switch
H type mechanism assembly
(Bottom view)
CN2
(White)
CN3
(Black)
To the capstan motor
Connector conversion jig
(J-6090-052-A)

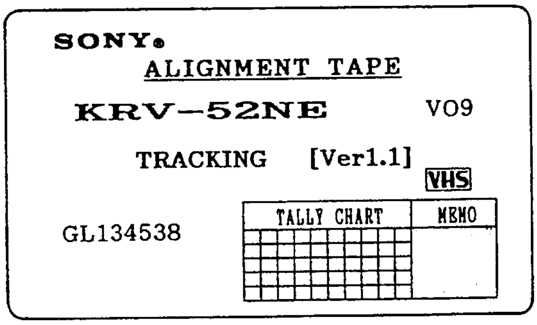
Fig. 1-1

2. ADJUSTING THE MECHANISM USING NEW ALIGNMENT TAPE (KRV-52NE for NTSC)

The conventional alignment tape (For NTSC) is now replaced with alignment tape KRV-52NE, and the following describes how to align the mechanism using the KRV-52NE. For details on the use of KRV-51N2 for each model, refer to the service manuals which will be issued in the future.

Name	Parts No.	Remarks
Alignment tape KRV-52NE for NTSC	8-192-605-41	For tape path, audio azimuth, and X-value adjustments
Alignment tape KRV-51N2 for NTSC	8-192-605-32	For electrical adjustments (RF, AF, and switching position) and operation check

Note: The KRV-52NE has or does not have Ver No. depending on new or old type as shown below. (New one has Ver No.)
Note that an adjusting method of X-value is different.



SONY®
ALIGNMENT TAPE
KRV–52NE V09
TRACKING [Ver1.1]
VHS
GL134538
TALLY CHART MEMO

Contents:
KRV-52NE (NTSC)

Time	Video	Audio
20 min.	Recording only at 1 MHz, A-ch. EP mode RF skipping once per 5 frames	5 kHz full tracks

KRV-51N2 (NTSC)

Class	Mode	Time	Video	Audio (HIFI/Normal)
1	SP	7 min.	Color bar	400 Hz
2	SP	3 min.	Mono. scope	400 Hz
3	EP	7 min.	Color bar	400 Hz
4	EP	3 min.	Mono. scope	400 Hz

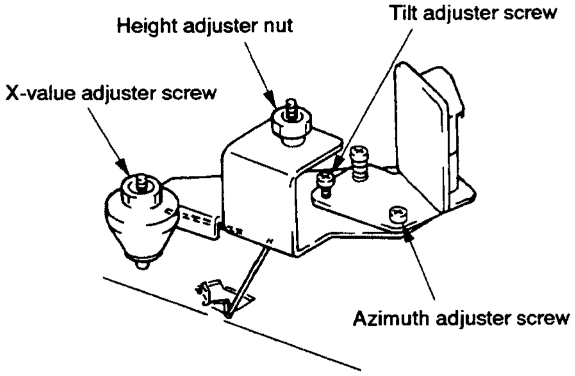
2-1. ADJUSTMENT USING ALIGNMENT TAPE (KRV-52NE for NTSC having no version No.)

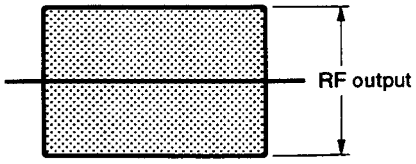
2-1-1. X-VALUE ADJUSTMENT (Using the tape having no version No.)

Purpose: To obtain compatibility with other VCRs.

Precaution: Before starting to adjust X-value, set the tracking control at the center position. To set the tracking control at the center position for the VCRs equipped with the ▲ and ▼ tracking control keys, press both the ▲ and ▼ tracking control keys at the same time. For the VCRs not equipped with the tracking control keys, deactivate the automatic tracking control by pressing the tracking AUTO/MANUAL key on the remote control unit during threading operation (after a tape is inserted but before the VCR starts playing back the tape).

Mode	Playback
Signal	Alignment tape KRV-52NE (For NTSC having no version No.)
Measuring instrument	Oscilloscope TIM/DIV: 2ms Trigger source: CH2 Trigger slope: +
Measuring point	CH-1: Connector PB RF pin for RF PC board check CH-2: Connector RF SWP pin for RF PC board check
Adjustment locations	X-value adjuster screw

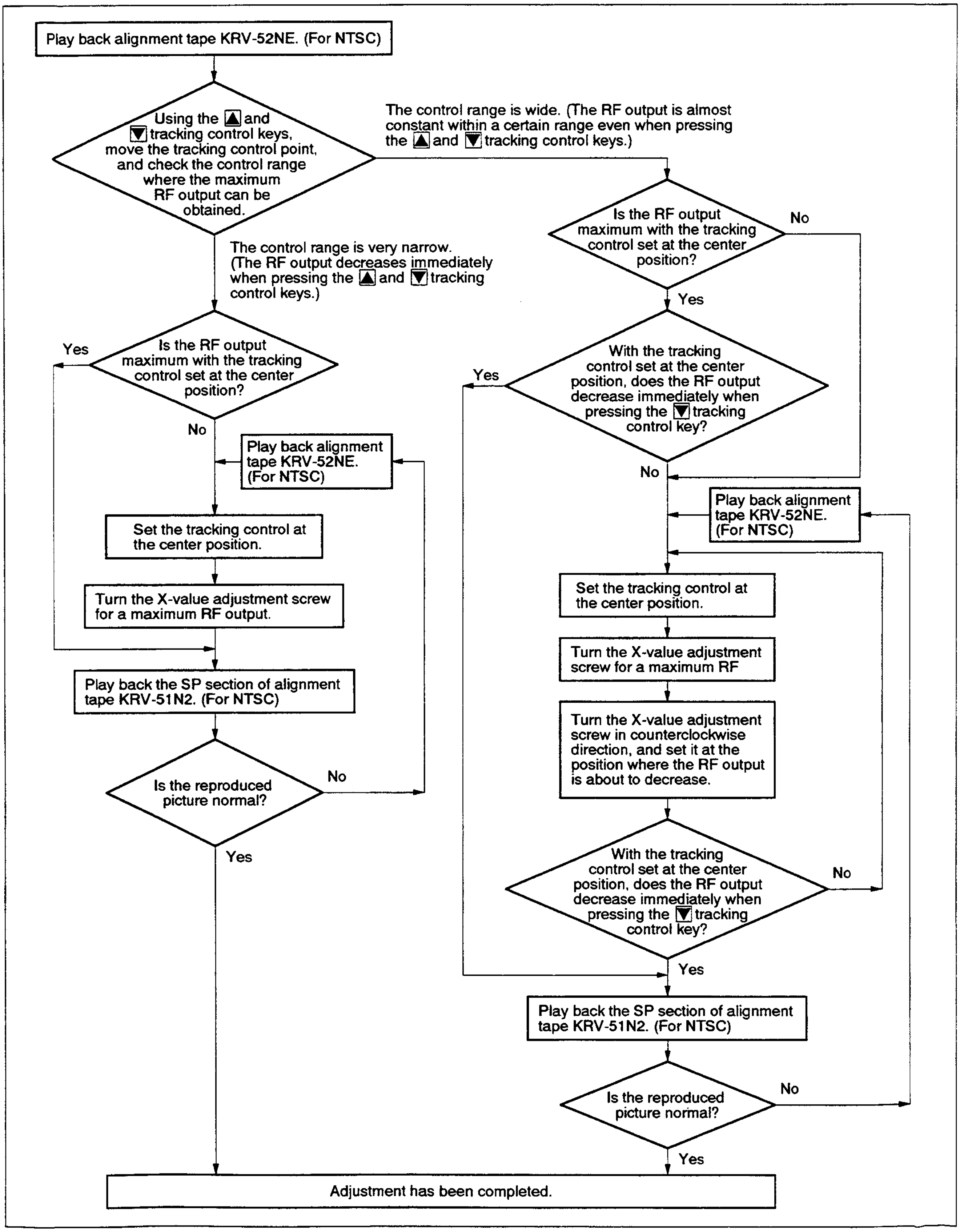




RF output shall be maximum at the center position of the tracking control.

[Adjustment Method]
Set the tracking control at the center position. For the VCRs equipped with narrow gap video heads, set the X-value adjustment screw where a maximum RF output is obtained. For the VCRs equipped with wide gap video heads, set the X-value adjustment screw both where a maximum RF output is obtained and where the RF output decreases immediately when the ▼ tracking control key is pressed.

X-VALUE ADJUSTMENT (Using the tape having no version No.)


Play back alignment tape KRV-52NE. (For NTSC)
Using the ▲ and ▼ tracking control keys, move the tracking control point, and check the control range where the maximum RF output can be obtained.
The control range is wide. (The RF output is almost constant within a certain range even when pressing the ▲ and ▼ tracking control keys.)
The control range is very narrow. (The RF output decreases immediately when pressing the ▲ and ▼ tracking control keys.)
Is the RF output maximum with the tracking control set at the center position?
Yes
No
Play back alignment tape KRV-52NE. (For NTSC)
Set the tracking control at the center position.
Turn the X-value adjustment screw for a maximum RF output.
Play back the SP section of alignment tape KRV-51N2. (For NTSC)
Is the reproduced picture normal?
No
Yes
Is the RF output maximum with the tracking control set at the center position?
No
Yes
With the tracking control set at the center position, does the RF output decrease immediately when pressing the ▼ tracking control key?
Yes
No
Play back alignment tape KRV-52NE. (For NTSC)
Set the tracking control at the center position.
Turn the X-value adjustment screw for a maximum RF
Turn the X-value adjustment screw in counterclockwise direction, and set it at the position where the RF output is about to decrease.
With the tracking control set at the center position, does the RF output decrease immediately when pressing the ▼ tracking control key?
No
Yes
Play back the SP section of alignment tape KRV-51N2. (For NTSC)
Is the reproduced picture normal?
No
Yes
Adjustment has been completed.

When adjustment is complete, adjust the height of No. 3 and No. 6 guide rollers on page 10.

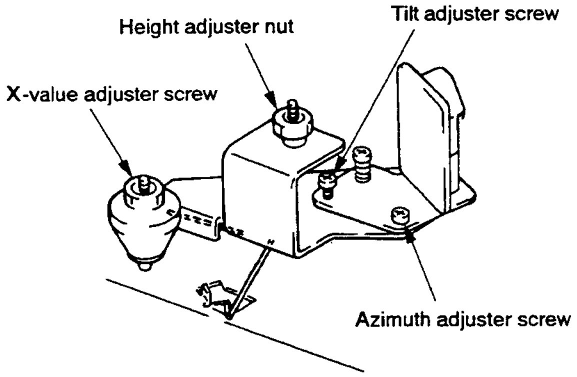
2-2. ADJUSTMENT USING ALIGNMENT TAPE (KRV-52NE for NTSC having the version No.)

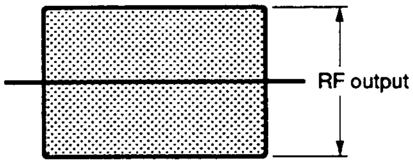
2-2-1. X-VALUE ADJUSTMENT (Using the tape having the version No.)

Purpose: To obtain compatibility with other VCRs.

Precaution: Before starting to adjust X-value, set the tracking control at the center position. To set the tracking control at the center position for the VCRs equipped with the ▲ and ▼ tracking control keys, press both the ▲ and ▼ tracking control keys at the same time. For the VCRs not equipped with the tracking control keys, deactivate the automatic tracking control by pressing the tracking AUTO/MANUAL key on the remote control unit during threading operation (after a tape is inserted but before the VCR starts playing back the tape).

Mode	Playback
Signal	Alignment tape KRV-52NE (For NTSC having the version No.)
Measuring instrument	Oscilloscope TIM/DIV: 2ms Trigger source: CH2 Trigger slope: +
Measuring point	CH-1: Connector PB RF pin for RF PC board check CH-2: Connector RF SWP pin for RF PC board check
Adjustment locations	X-value adjuster screw

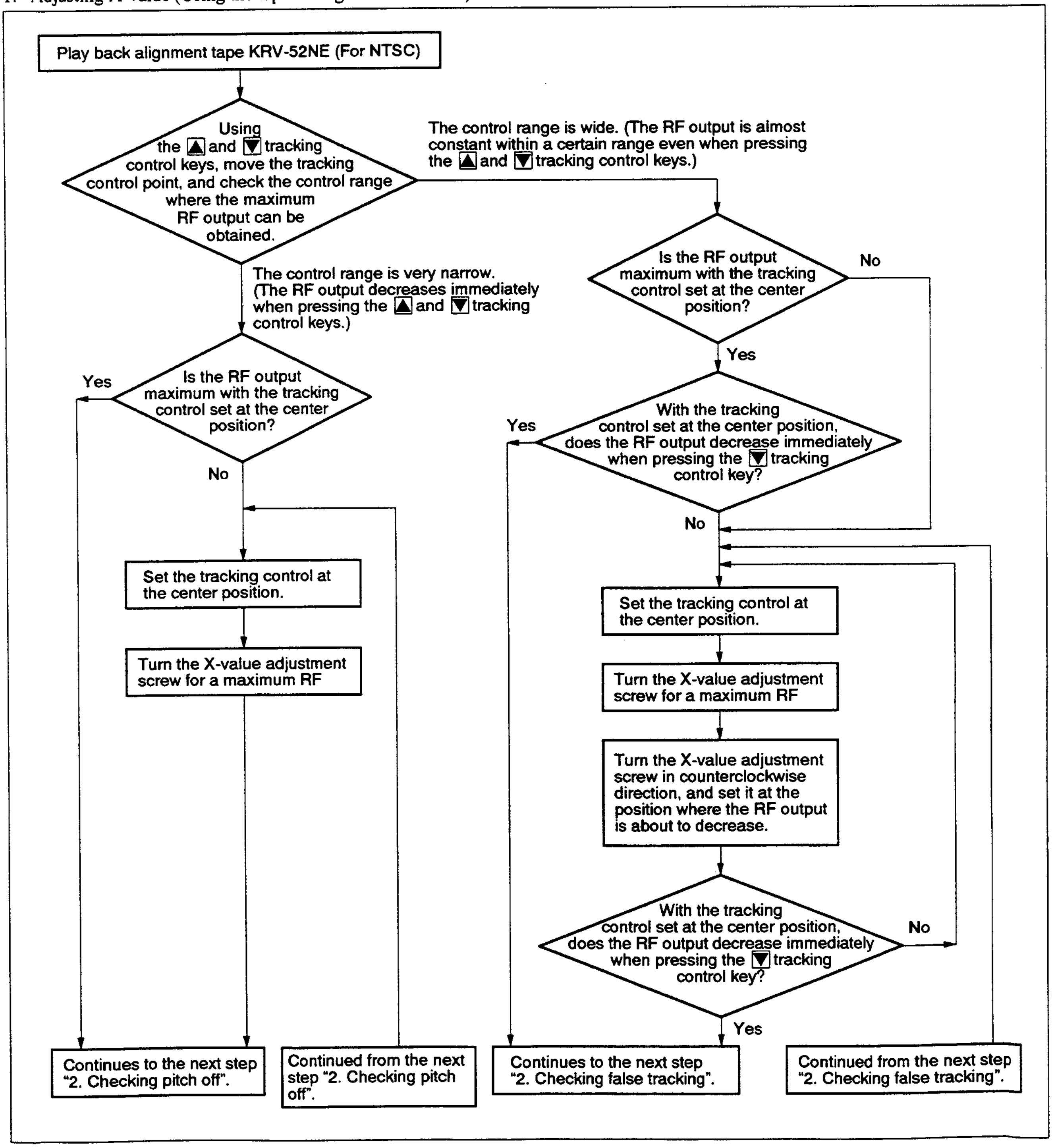




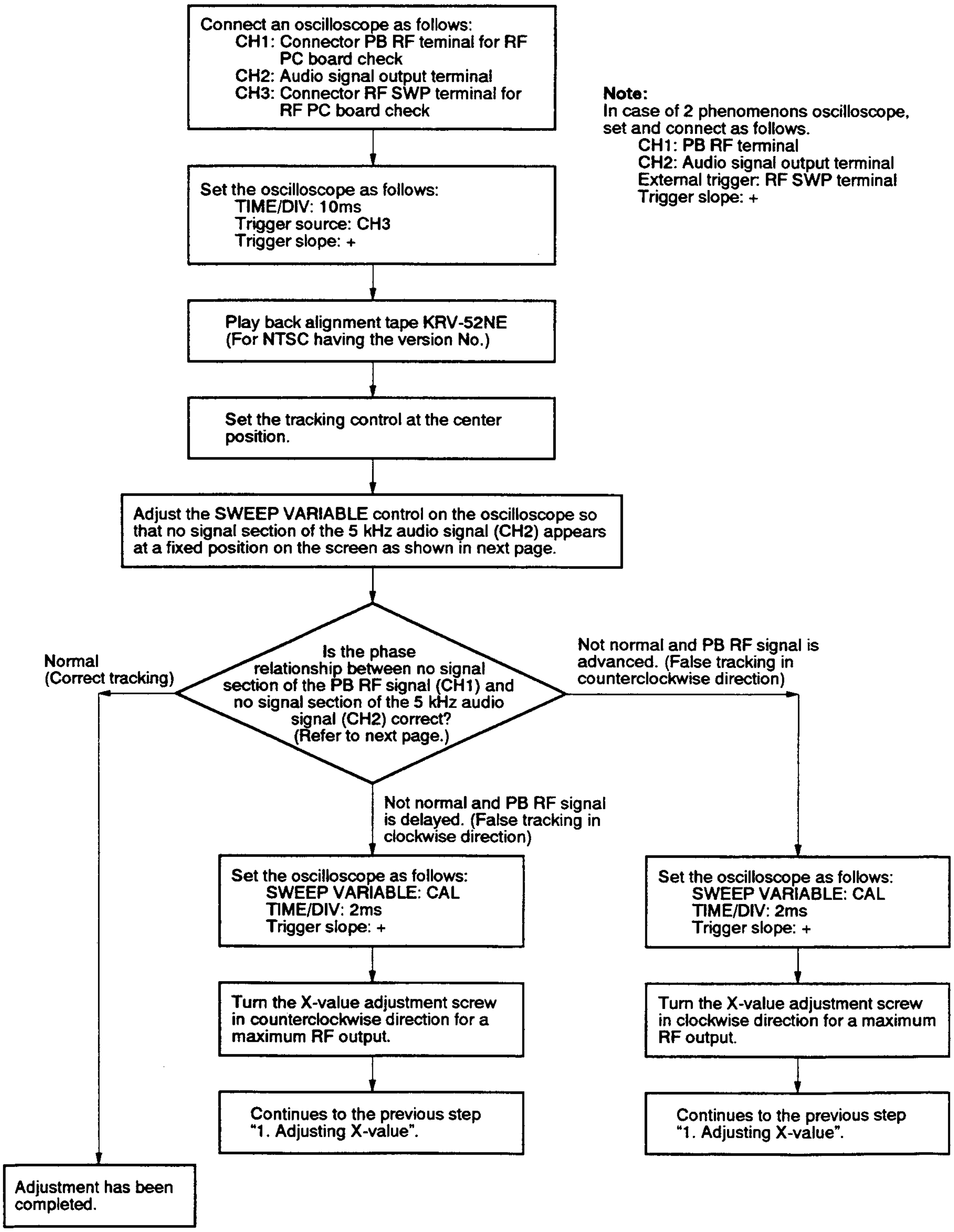
RF output shall be maximum at the center position of the tracking control.

[Adjustment Method]
Set the tracking control at the center position. For the VCRs equipped with narrow gap video heads, set the X-value adjustment screw where a maximum RF output is obtained. For the VCRs equipped with wide gap video heads, set the X-value adjustment screw both where a maximum RF output is obtained and where the RF output decreases immediately when the ▼ tracking control key is pressed.

1. Adjusting X-value (Using the tape having the version No.)


Play back alignment tape KRV-52NE (For NTSC)
Using the ▲ and ▼ tracking control keys, move the tracking control point, and check the control range where the maximum RF output can be obtained.
The control range is wide. (The RF output is almost constant within a certain range even when pressing the ▲ and ▼ tracking control keys.)
The control range is very narrow. (The RF output decreases immediately when pressing the ▲ and ▼ tracking control keys.)
Is the RF output maximum with the tracking control set at the center position?
Yes
No
Set the tracking control at the center position.
Turn the X-value adjustment screw for a maximum RF
Continues to the next step "2. Checking pitch off".
Continued from the next step "2. Checking pitch off".
Is the RF output maximum with the tracking control set at the center position?
No
Yes
With the tracking control set at the center position, does the RF output decrease immediately when pressing the ▼ tracking control key?
Yes
No
Set the tracking control at the center position.
Turn the X-value adjustment screw for a maximum RF
Turn the X-value adjustment screw in counterclockwise direction, and set it at the position where the RF output is about to decrease.
With the tracking control set at the center position, does the RF output decrease immediately when pressing the ▼ tracking control key?
No
Yes
Continues to the next step "2. Checking false tracking".
Continued from the next step "2. Checking false tracking".

2. Checking false tracking (Using the tape having the version No.)



Connect an oscilloscope as follows:
CH1: Connector PB RF teminal for RF PC board check
CH2: Audio signal output terminal
CH3: Connector RF SWP terminal for RF PC board check

Note:
In case of 2 phenomenons oscilloscope, set and connect as follows.
CH1: PB RF terminal
CH2: Audio signal output terminal
External trigger: RF SWP terminal
Trigger slope: +

Set the oscilloscope as follows:
TIME/DIV: 10ms
Trigger source: CH3
Trigger slope: +

Play back alignment tape KRV-52NE (For NTSC having the version No.)

Set the tracking control at the center position.

Adjust the SWEEP VARIABLE control on the oscilloscope so that no signal section of the 5 kHz audio signal (CH2) appears at a fixed position on the screen as shown in next page.

Is the phase relationship between no signal section of the PB RF signal (CH1) and no signal section of the 5 kHz audio signal (CH2) correct? (Refer to next page.)

Normal (Correct tracking)

Adjustment has been completed.

Not normal and PB RF signal is delayed. (False tracking in clockwise direction)

Set the oscilloscope as follows:
SWEEP VARIABLE: CAL
TIME/DIV: 2ms
Trigger slope: +

Turn the X-value adjustment screw in counterclockwise direction for a maximum RF output.

Continues to the previous step "1. Adjusting X-value".

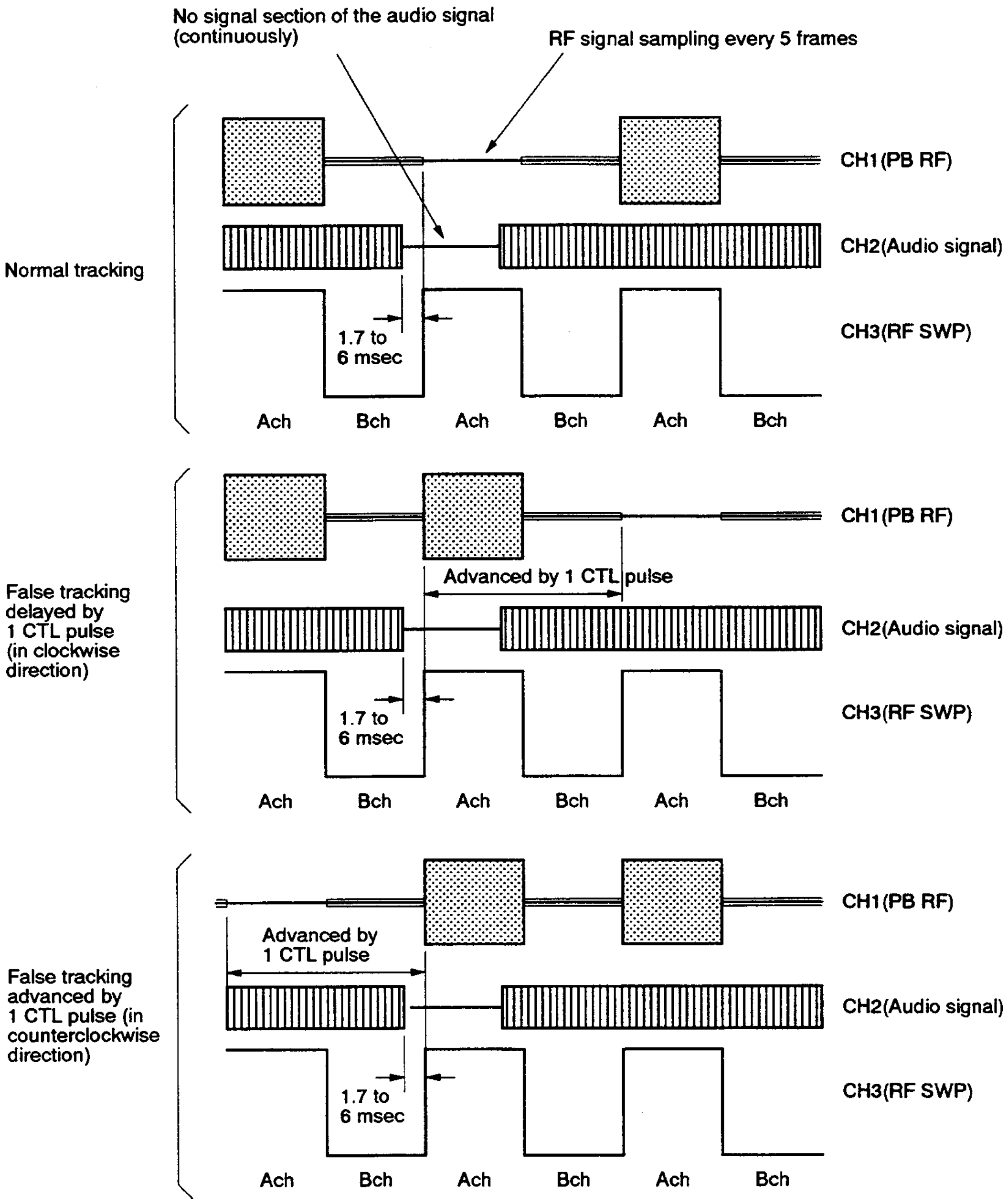
Not normal and PB RF signal is advanced. (False tracking in counterclockwise direction)

Set the oscilloscope as follows:
SWEEP VARIABLE: CAL
TIME/DIV: 2ms
Trigger slope: +

Turn the X-value adjustment screw in clockwise direction for a maximum RF output.

Continues to the previous step "1. Adjusting X-value".

Using the tape having the version No.


No signal section of the audio signal (continuously)
RF signal sampling every 5 frames
Normal tracking
CH1(PB RF)
CH2(Audio signal)
CH3(RF SWP)
1.7 to 6 msec
Ach
Bch
Ach
Bch
Ach
Bch
False tracking delayed by 1 CTL pulse (in clockwise direction)
Advanced by 1 CTL pulse
CH1(PB RF)
CH2(Audio signal)
CH3(RF SWP)
1.7 to 6 msec
Ach
Bch
Ach
Bch
Ach
Bch
False tracking advanced by 1 CTL pulse (in counterclockwise direction)
Advanced by 1 CTL pulse
CH1(PB RF)
CH2(Audio signal)
CH3(RF SWP)
1.7 to 6 msec
Ach
Bch
Ach
Bch
Ach
Bch

2-3. ADJUSTING THE MECHANISM USING ALIGNMENT TAPE (KRV-52NE for NTSC)

2-3-1. HEIGHT ADJUSTMENT OF GUIDE ROLLERS NO. 3 AND NO. 6

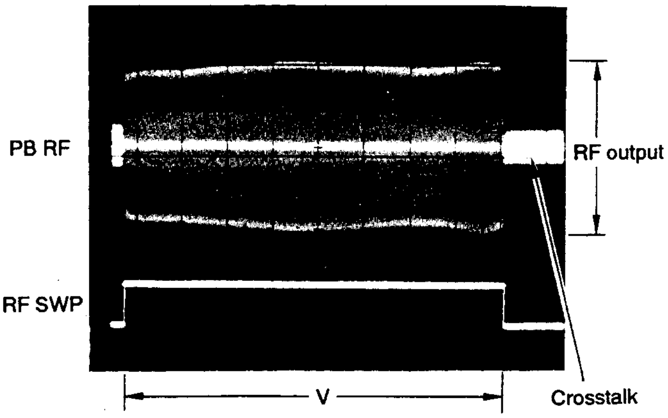
Mode	Playback
Signal	Alignment tape KRV-52NE (For NTSC)
Measuring instrument	Oscilloscope TIM/DIV: 2ms Trigger source: CH2 Trigger slope: +
Measuring point	CH-1: Connector PB RF pin for RF PC board check CH-2: Connector RF SWP pin for RF PC board check
Adjustment locations	Height adjustment screw for No.3 tape guide roller Height adjustment screw for No.6 tape guide roller

[Adjustment Method]

The following adjustment shall be carried out after completed Section 2-1-1 "X-value adjustment and check".

1) Deactivate the automatic tracking control, and set the tracking control at the center position. To set the tracking control at the center position for the VCRs equipped with the ▲ and ▼ tracking control keys, press both the ▲ and ▼ tracking control keys at the same time. For the VCRs not equipped with the tracking control keys, deactivate the automatic tracking control by pressing the tracking AUTO/MANUAL key on the remote control unit during threading operation (after a tape is inserted but before the VCR starts playing back the tape).

2) Check if the RF output changes in amplitude by pressing the tracking control key. The RF output should change periodically (changes from a minimum amplitude to a maximum amplitude, and to the minimum amplitude again).



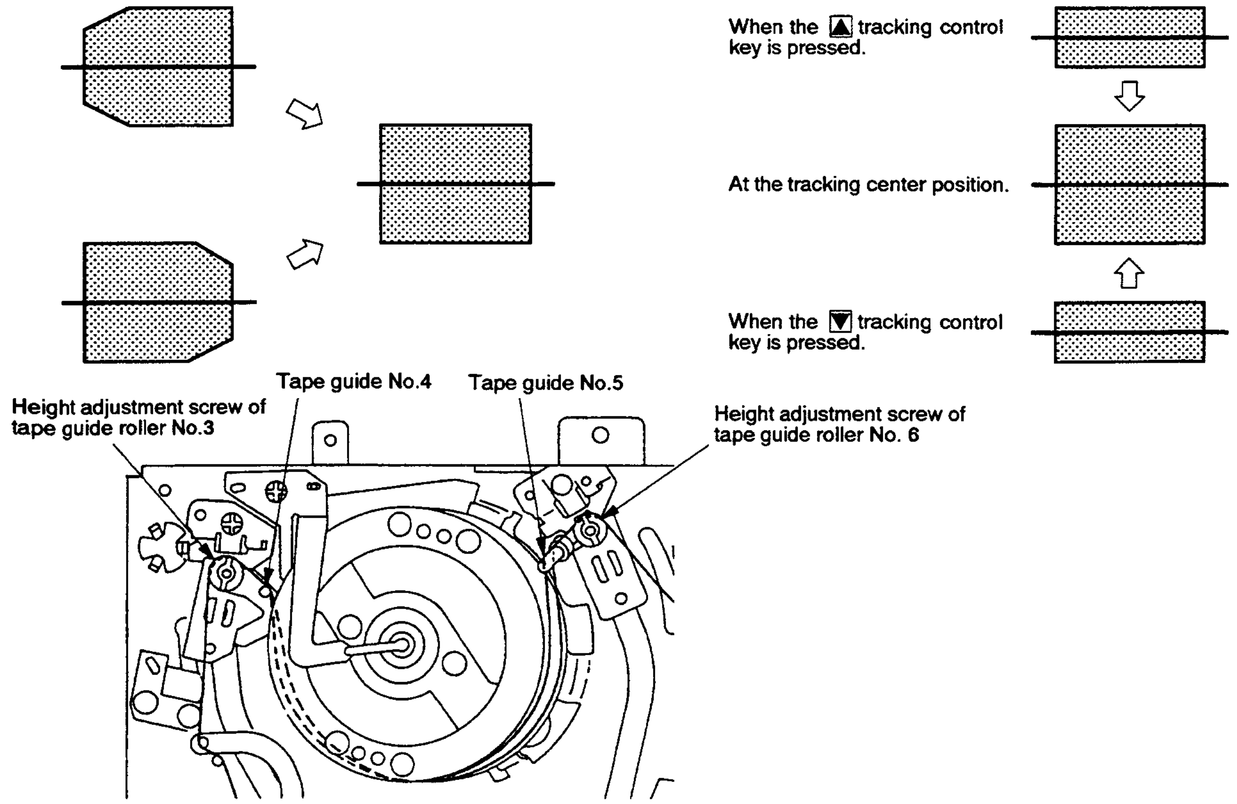
3) Turn the height adjustment screws of tape guide rollers No.3 and No.6 so that the RF output envelope becomes as flat as possible.

4) Press the ▲ tracking control key, and check that both the beginning and end of the RF output change together the same in amplitude.

5) Press the ▼ tracking control key, and check that both the beginning and end of the RF output change together the same in amplitude.

Turn the height adjustment screws of tape guide rollers No.3 and No.6 little by little so that the RF output envelope becomes as flat as possible.

Press the ▼ tracking control key, then the ▼ tracking control key, and check that both the beginning and end of the RF output change together the same in amplitude.


When the ▲ tracking control key is pressed.
At the tracking center position.
When the ▼ tracking control key is pressed.
Tape guide No.4
Tape guide No.5
Height adjustment screw of tape guide roller No.3
Height adjustment screw of tape guide roller No. 6

2-3-2. ACE HEAD ASSEMBLY ADJUSTMENT (ROUGH ADJUSTMENT) (Figs. 2-1 and 2-2)

Purpose: Allows the tape to make even contact with the head for recording and playback of the specified track.

Mode	Playback
Jig	Blank tape
Adjustment locations	Height adjuster nut, Tilt adjuster screw

[Adjustment Method]

1) Mount the ACE head assembly. At this time, adjust the height so that the height of guide flange No. 7 matches the level of the lower edge of the control head.
2) Remove the adjustment tool and load a new tape, then set the unit for playback.
3) Check that the tape does not curl or rise up noticeably near the ACE head.
4) If the tape curls up or rises noticeably, readjust the tilt adjuster screw and the height adjuster nut.
(The height of the ACE head should be adjusted so that the lower edge of the tape is approx. 0.1 to 0.15 mm from the control head.)
5) Perform precision adjustment.

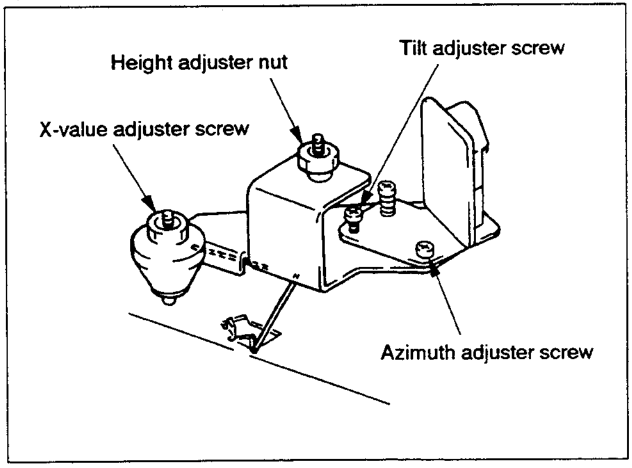


Fig. 2-1

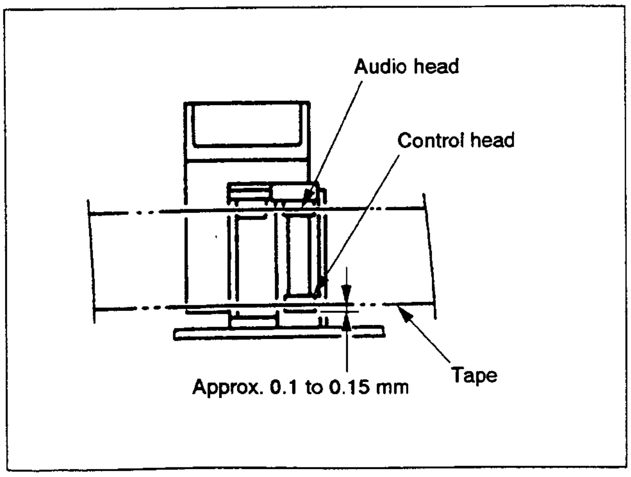


Fig. 2-2

2-3-3. ACE HEAD ASSEMBLY ADJUSTMENT (PRECISION ADJUSTMENT)

Mode	Playback
Signal	Alignment tape (KRV-52NE 5 kHz) (For NTSC)
Measuring instrument	Oscilloscope
Measuring point	Audio output terminal
Adjustment locations	Azimuth adjuster screw, Height adjuster nut, Tilt adjuster screw

[Adjustment Method]

1) Adjust the tilt adjuster screw in the FWD or REV mode so that the lower flange of guide No. 7 does not curl up or rise.
2) Alternately adjust the azimuth adjuster screw, the height adjuster nut, and the tilt adjuster screw to maintain even audio output at maximum with minimum deviation.

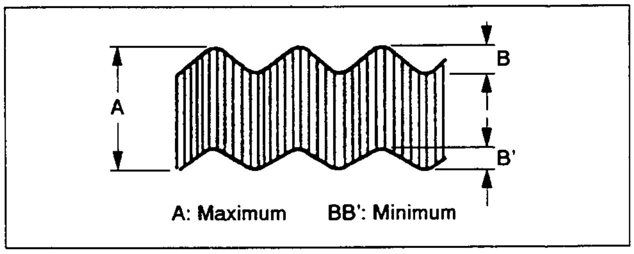


Fig. 2-3

2-3-4. ADJUSTMENTS AFTER REPLACING THE DRUM (VIDEO HEAD)

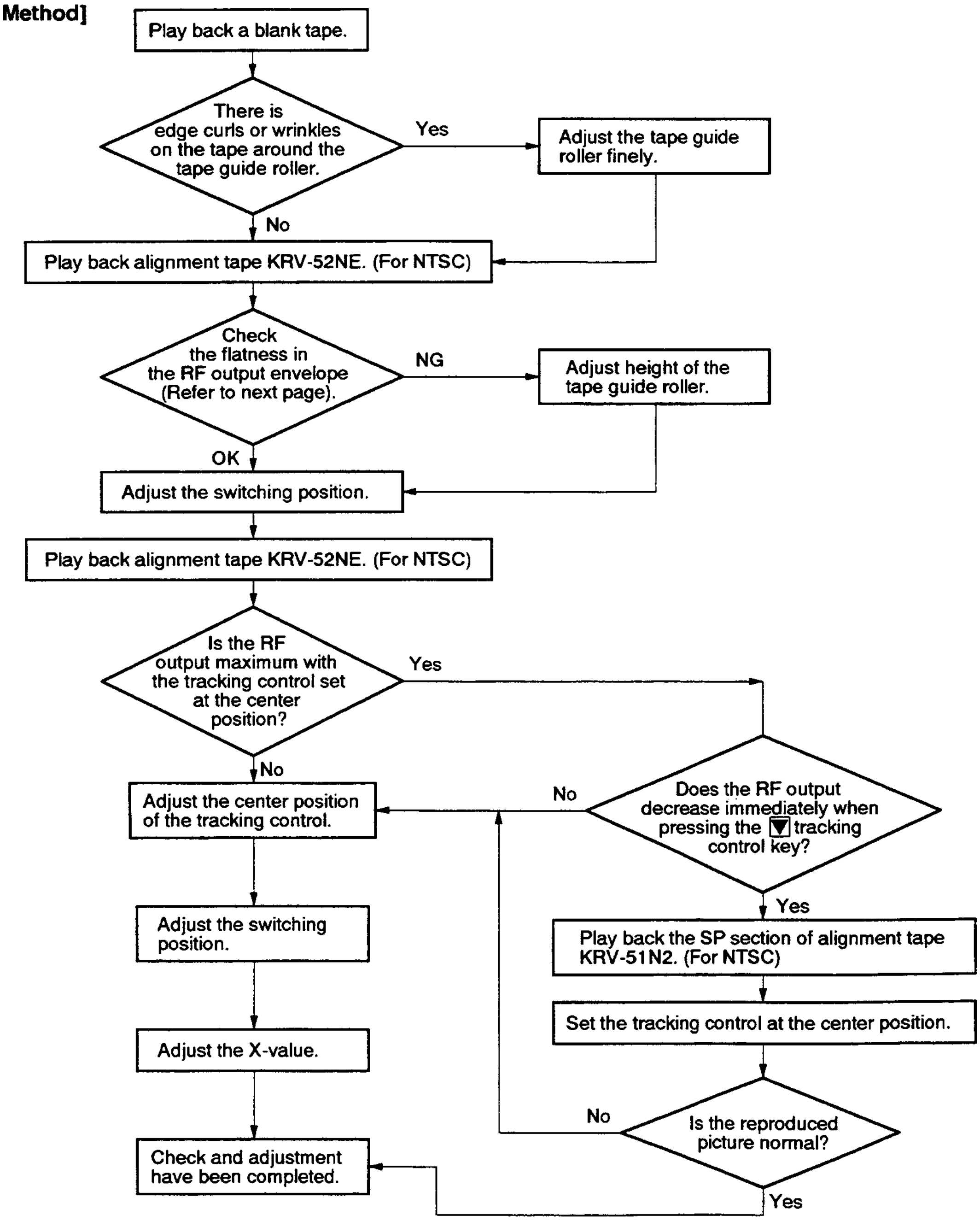
Purpose: Co-relative height, X-value and other factors of the drum will deviate from those of the guide roller. If the drum is replaced properly, these deviations are extremely small.

Note 1: Deactivate the automatic tracking control for setting the mechanism in manual tracking control mode.

Note 2: To set the tracking control at the center position, deactivate the automatic tracking control by pressing the tracking AUTO/MANUAL key on the remote control unit during threading operation (after a tape is inserted but before the VCR starts playing back the tape).

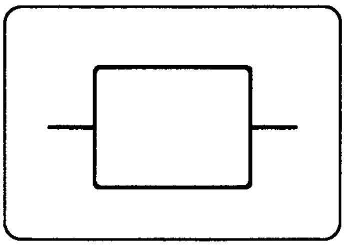
Mode	Playback
Signal	Alignment tape KRV-52NE (For NTSC), blank tape
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SWP pin for RF PC board check.
Adjustment locations	Guide roller (Refer to 2-3-1.) Switching position (Refer to the Service Manual) X-value (Refer to 2-1-1, 2-1-2.)

[Adjustment Method]

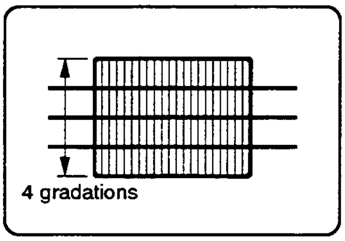

Play back a blank tape.
There is edge curls or wrinkles on the tape around the tape guide roller.
Yes
Adjust the tape guide roller finely.
No
Play back alignment tape KRV-52NE. (For NTSC)
Check the flatness in the RF output envelope (Refer to next page).
NG
Adjust height of the tape guide roller.
OK
Adjust the switching position.
Play back alignment tape KRV-52NE. (For NTSC)
Is the RF output maximum with the tracking control set at the center position?
Yes
No
Adjust the center position of the tracking control.
No
Does the RF output decrease immediately when pressing the ▼ tracking control key?
Yes
Play back the SP section of alignment tape KRV-51N2. (For NTSC)
Adjust the switching position.
Set the tracking control at the center position.
Adjust the X-value.
No
Is the reproduced picture normal?
Check and adjustment have been completed.
Yes

[Checking the evenness and fluctuation of the RF output]

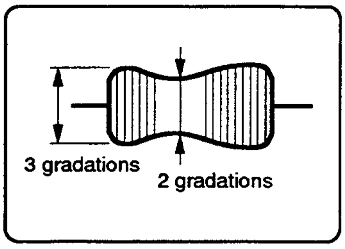
1) Set the RF output to the maximum level using the tracking buttons.



2) Perform fine adjustment of the voltage level range of the oscilloscope, then adjust the RF output deviation to within 4 gradations.



3) Press the tracking buttons and adjust the maximum amplitude of the RF output to within 3 gradations.
4) At this time, check if the minimum amplitude is more than 2 gradations.



5) Check that the RF output fluctuation between minimum and maximum levels is within 13%.

VHS MECHANICAL ADJUSTMENT MANUAL IV

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Quality Engineering Dept.

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VHS MECHANICAL ADJUSTMENT MANUAL IV

SONY®
SERVICE MANUAL

H MECHANISM

SUPPLEMENT-2

File this supplement with the VHS mechanical adjustment IV and supplement-1.

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2-3.	TG3, TG6 Guide Roller Assembly	3
2-4.	TG8 Assembly	4
2-5.	Tension Regulator (TG1) Position Tension Adjustment	5
2-6.	TG8 Guide Roller Height Adjustment	6

1. CORRECTION

In the VHS Mechanism Adjustment Manual IV (Supplement-1), an adjustment sequence was wrong, and it is corrected as follow;

1-1. Adjustment Sequence (VHS Mechanism Adjustment Manual IV (Supplement-1) Page 6 to 11)

(1) Adjustment of No. 3 and No. 6 guide roller height
Delete the "The following adjustment shall be carried out after completed Section 2-1-1 "X-value adjustment and check" under "Adjustment Method" on page 10.

(2) Adjustment of ACE head assembly

Note: In the adjustment of ACE head assembly (coarse adjustment and fine adjustment), if a azimuth, height and tilt were adjusted, again adjust the height of No. 3 and No. 6 guide rollers.

(3) Adjustment of X value

MICROFILM

2. MODIFICATION

2-1. CHANGING THE RECORDED CONTENTS OF ALIGNMENT TAPE

KRV-52NE (NTSC) (Ver. 1.2)

Time	Video	Audio
20 min.	Recording only at 1 MHz, A-ch. EP mode RF skipping once per 5 frames	5 kHz → 4 kHz full tracks

2-2. TG2 ROLLER, FE HEAD ASSEMBLY (Refer to VHS Mechanical Adjustment Manual IV page14)

- The TG2 roller is provided with either of two types, fixed or straight. For the fixed type, section 3-5 is added.

3-5. TG2 ROLLER, FE HEAD ASSEMBLY (Fig. 3-5)

1) Remove screw ① to pull out FE head assembly ②.

[Note on Mounting]

- Keep clean the surface contacts tape of TG2 roller.

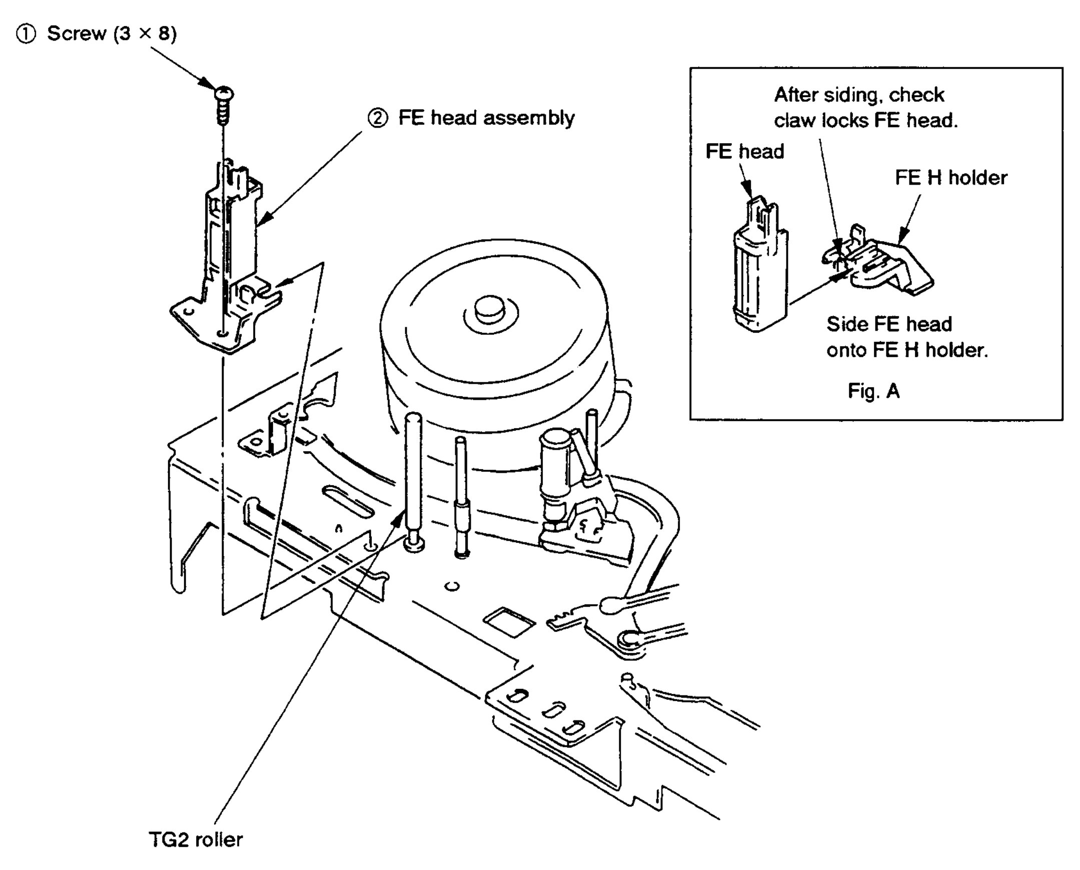
① Screw (3 × 8)
② FE head assembly
TG2 roller
After siding, check claw locks FE head.
FE head
FE H holder
Side FE head onto FE H holder.
Fig. A

Fig. 3-5

2-3. TG3, TG6 GUIDE ROLLER ASSEMBLIES (Refer to VHS Mechanical Adjustment Manual IV page 17)

- There is another type in TG3 and TG6 guide roller assemblies, which is not attached with a screw (B2X3). For the screwless type, section 3-8 is added.

3-8. TG3, TG6 GUIDE ROLLER ASSEMBLIES (Fig. 3-8)

1) TG3 guide roller assembly ① by turning it in arrow Ⓐ direction.
2) Removal the spring ②.
3) TG6 guide roller assembly ③ by turning it in arrow Ⓑ direction.
4) Removal the spring ④.

[Note on Mounting]

- Keep clean the surface contacts tape of TG3 and TG6 guide roller assemblies ①, ③.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

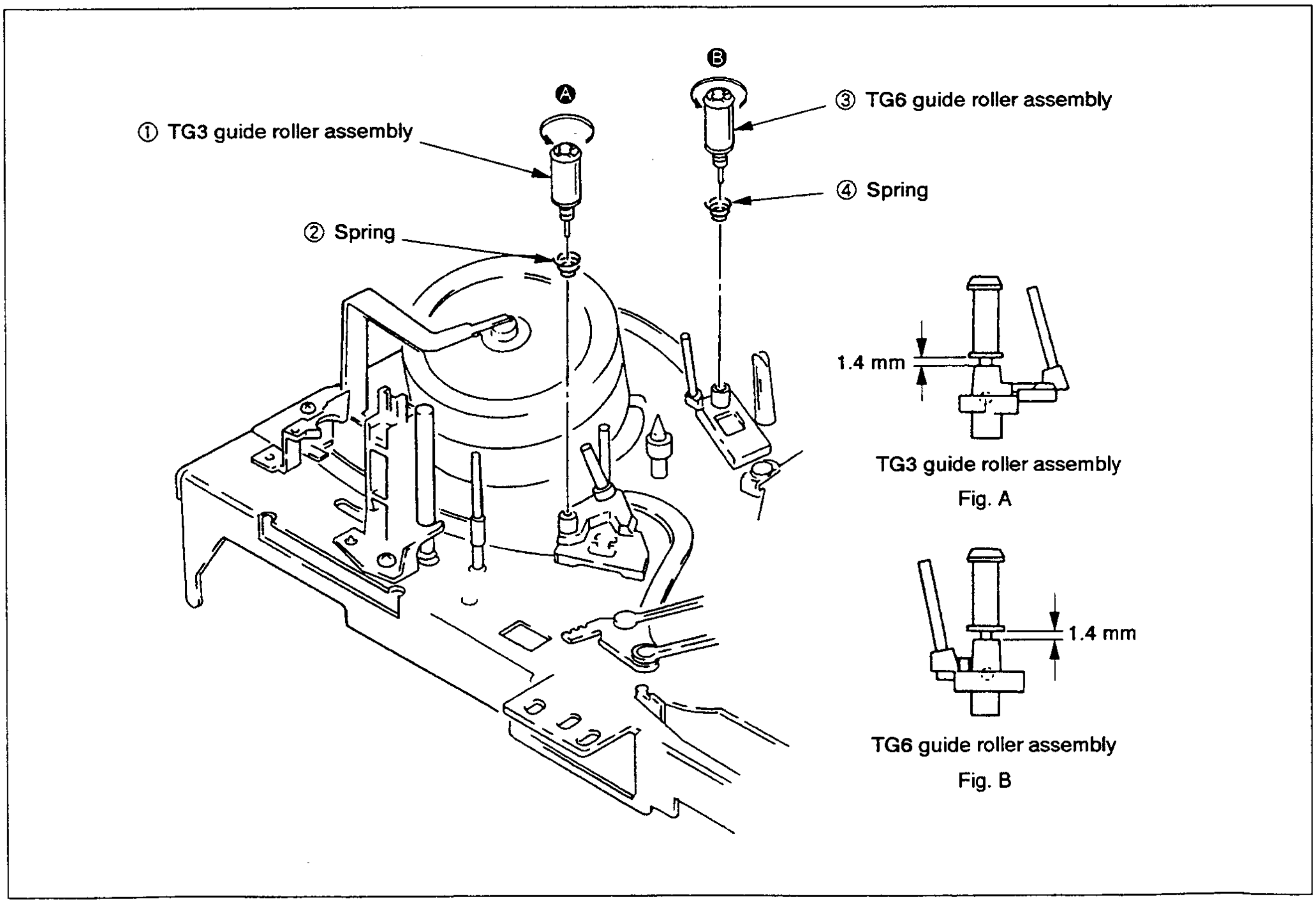
Ⓑ
Ⓐ
③ TG6 guide roller assembly
① TG3 guide roller assembly
④ Spring
② Spring
1.4 mm
TG3 guide roller assembly
Fig. A
1.4 mm
TG6 guide roller assembly
Fig. B

Fig. 3-8

2-4. TG8 ASSEMBLY (Refer to VHS Mechanical Adjustment Manual Ⅳ page 23)

- As the shape of TG8 assembly was changed, Section 3-13 is changed.

☛ : Chenged portion

3-13. TG8 ASSEMBLY (Fig. 3-15)

1) Remove TG7 tape retainer ① to pull out TG8 assembly ②.

[Note on Mounting]

- Apply FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portion.
- Keep clean the surface contacts tape of TG8 assembly ②.
- Be careful not to change the shape of TG7 tape retainer ①.
- After attaching the TG7 tape retainer ①, check that side Ⓐ of ① is below side Ⓑ of the stepped-part of the TG7 shaft. (Fig. A)

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

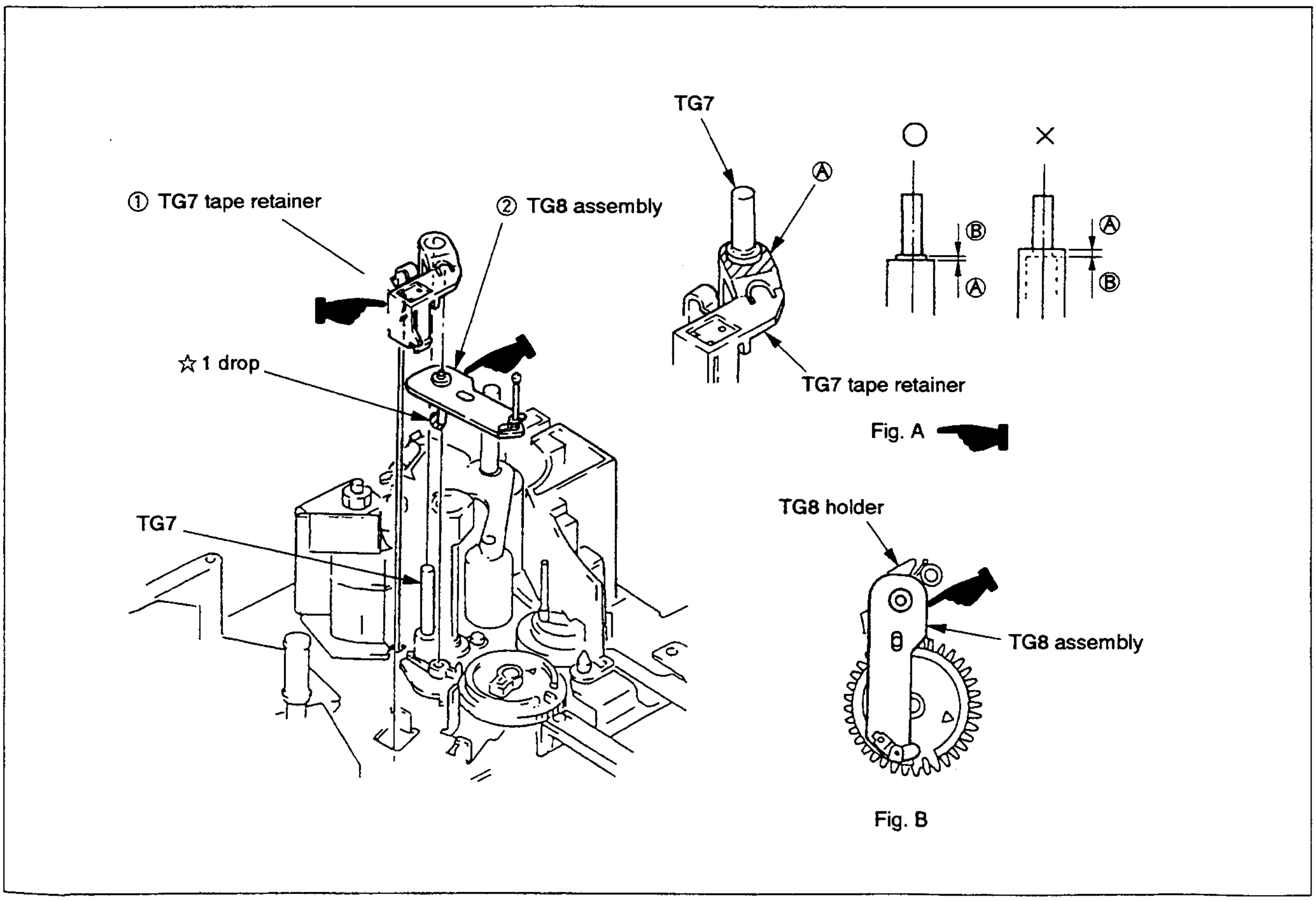
① TG7 tape retainer
② TG8 assembly
☆1 drop
TG7
TG7
Ⓐ
○
×
Ⓑ
Ⓐ
Ⓐ
Ⓑ
TG7 tape retainer
TG8 holder
TG8 assembly

Fig. A

Fig. B

Fig. 3-15

2-5. TENSION REGULATOR (TG1) POSITION/ TENSION ADJUSTMENT (Refer to VHS Mechanical Adjustment Manual Ⅳ page 35)

- As the tension regulator position and tension adjustment were changed, the tension adjustment and Fig. 4-1 are changed.

☛ : Changed portion

- **Tension adjustment**

Mode	Playback
Measuring instrument/tool	Torque cassette
Adjustment locations	Position for hooking the tension spring
Specified value	34 ± 4 g•cm ☛

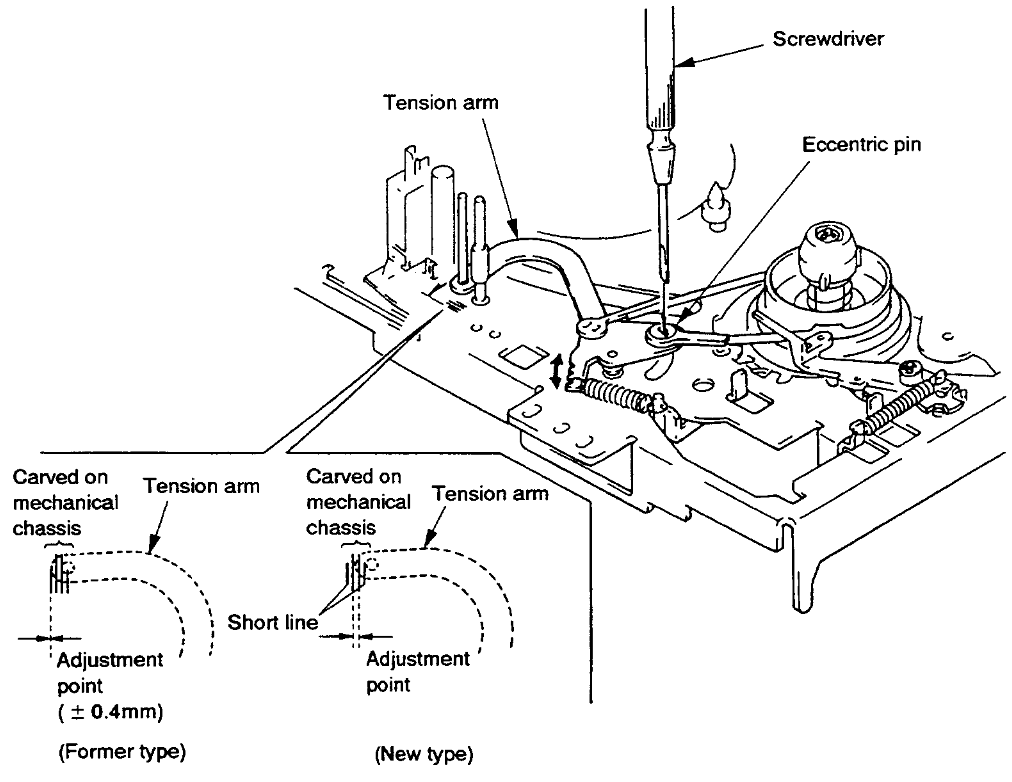
Screwdriver
Tension arm
Eccentric pin
Carved on mechanical chassis
Tension arm
Adjustment point
(± 0.4mm)
(Former type)
Carved on mechanical chassis
Tension arm
Short line
Adjustment point
(New type)

Fig. A ☛

Fig. 4-1

2-6. TG8 GUIDE ROLLER HEIGHT ADJUSTMENT (Refer to VHS Mechanical Adjustment Manual IV page 36)

- As the use of TG8 height adjusting screw was cancelled, section 4-1-2 is changed.

4-1-2. TG7 TAPE PATH ADJUSTMENT (Fig. 4-2)

[Adjustment Method]

1) Load a tape, and playback the tape in the CUE mode, confirm the distance between lower flange of No. 7 guide roller and lower side of tape (Fig. A).
2) Then, feeding the tape in the REV mode, confirm the distance between lower flange of No. 7 guide roller and lower side of tape.
3) If the tape height in the REV feed is higher that in the CUE playback (Fig. B), rotate the ACE head flapping adjust screw in the direction Ⓐ so that a difference in tape height between CUE mode and REV mode becomes zero.
4) If the tape height in the REV feed is lower that in the CUE playback (Fig. C), rotate the ACE head flapping adjust screw in the direction Ⓑ so that a difference in tape height between CUE mode and REV mode becomes zero.

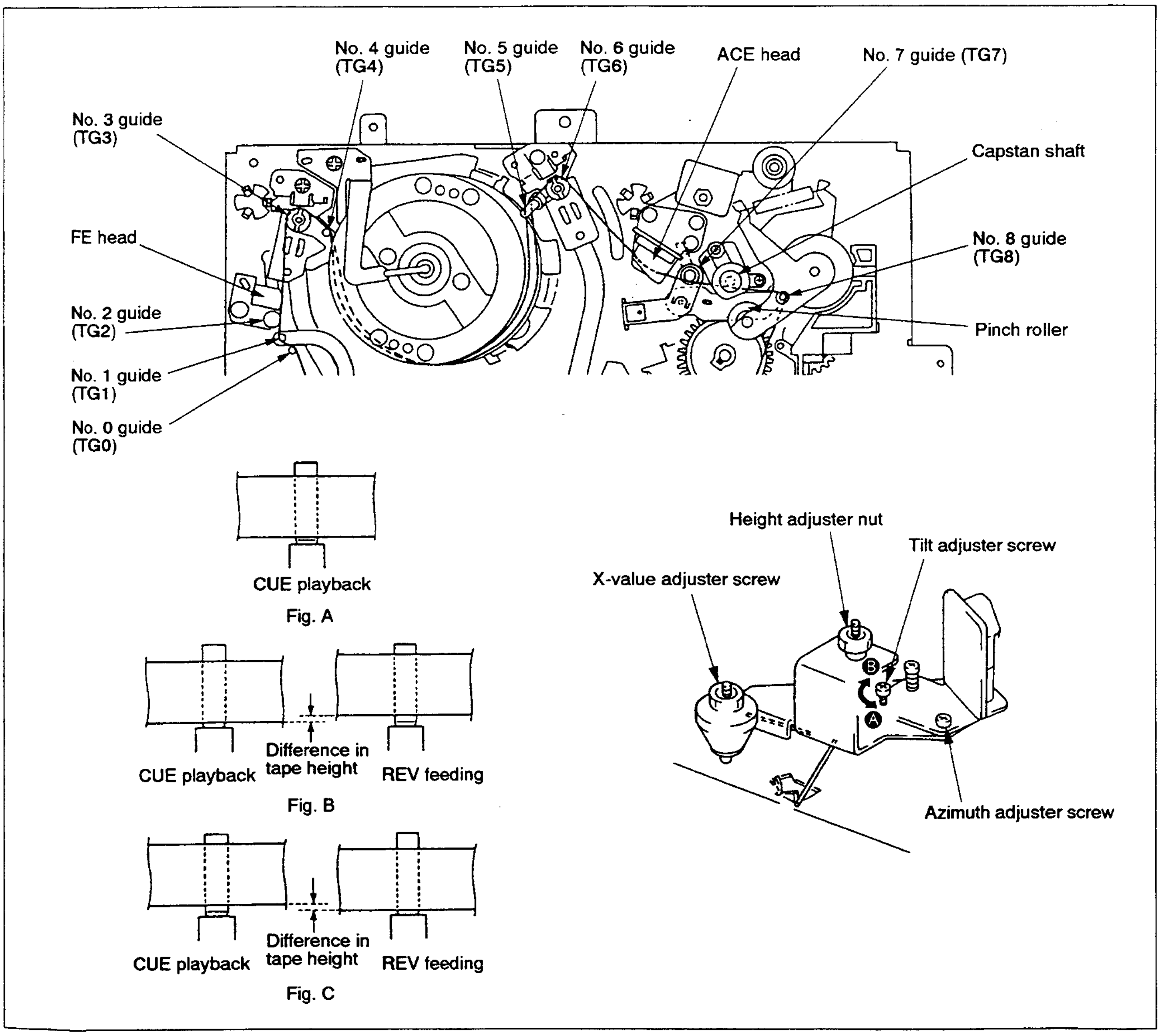
No. 4 guide (TG4)
No. 5 guide (TG5)
No. 6 guide (TG6)
ACE head
No. 7 guide (TG7)
No. 3 guide (TG3)
Capstan shaft
FE head
No. 8 guide (TG8)
No. 2 guide (TG2)
Pinch roller
No. 1 guide (TG1)
No. 0 guide (TG0)
CUE playback
Fig. A
Height adjuster nut
Tilt adjuster screw
X-value adjuster screw
B
A
Azimuth adjuster screw
CUE playback
Difference in tape height
REV feeding
Fig. B
CUE playback
Difference in tape height
REV feeding
Fig. C

Fig. 4-2

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